DOCUMENT RESUME

ED 467 709 RC 023 619

AUTHOR	Bartfai, Nicole; Kleiner, Brian; Nyre, Glenn; Plishker, Laurie; Silverstein, Gary; Snow, Kyle
TITLE	Collected Case Study Evaluations of the Appalachian Regional Commission's Educational Projects.
INSTITUTION	Westat, Inc., Rockville, MD.
SPONS AGENCY	Appalachian Regional Commission, Washington, DC.
PUB DATE	2001-03-00
NOTE	170p.
AVAILABLE FROM	For full text: http://www.arc.gov/images/reports/edeval2/CollectedCaseStudyEvaluationsReport.PDF.
PUB TYPE	Reports - Evaluative (142) -- Tests/Questionnaires (160)
EDRS PRICE	EDRS Price MF01/PC07 Plus Postage.
DESCRIPTORS	Adult Education; *Agency Cooperation; At Risk Persons; *Case Studies; *Community Involvement; Elementary Secondary Education; *Low Income Counties; Participative Decision Making; Poverty; Program Design; Program Effectiveness; Program Evaluation; *Rural Education; School Community Relationship
IDENTIFIERS	*Appalachia; Appalachian Regional Commission DC

ABSTRACT

As part of an evaluation of educational projects funded by the Appalachian Regional Commission (ARC) during the 1990s, case studies were conducted at eight sites in four Appalachian states. The sites reflected a range of project types, including school programs, adult literacy, distance education, and dropout prevention. Site visits allowed for a more detailed examination of successful ARC-funded education projects, with an emphasis on achievement of project outcomes, lessons learned, and efforts at sustainability. Several themes emerged across most sites visited. Many grant recipients stressed that even before a project begins, there should be a clear articulation of project goals. The need to cultivate community support for the project was consistently mentioned. Setting aside ample time and resources for designing and planning a project was emphasized. Several sites stressed the importance of specifying the distinct community segments that are to participate in and benefit from project-related activities. Also emphasized was the need for projects to anticipate and make adjustments for the needs and capabilities of their intended beneficiaries. Selecting staff who have an optimal combination of academic, technical, and interpersonal skills, as well as commitment to community service was important. Staff were often most successful when they came from the community. The importance of strong leadership was noted. Integration of services with other agencies often improved services to stakeholders. The best of these projects provided interventions for all family members. Many sites indicated that they would have benefitted from giving more thought to evaluation. (TD)

Reproductions supplied by EDRS are the best that can be made
from the original document.

ED 467 709

Collected Case Study Evaluations of the Appalachian Regional Commission's Educational Projects

U.S. DEPARTMENT OF EDUCATION
Office of Educational Research and Improvement
EDUCATIONAL RESOURCES INFORMATION CENTER (ERIC)
☑ This document has been reproduced as received from the person or organization originating it.
☐ Minor changes have been made to improve reproduction quality.
• Points of view or opinions stated in this document do not necessarily represent official OERI position or policy.

Study Conducted by Westat
For the Appalachian Regional Commission

March 2001

RC 023619

BEST COPY AVAILABLE

Collected Case Study Evaluations of the Appalachian Regional Commission's Educational Projects

Prepared by:

Nicole Bartfai
Brian Kleiner
Glenn Nyre
Laurie Plishker
Gary Silverstein
Kyle Snow

Westat
1650 Research Boulevard
Rockville, Maryland 20850

Prepared for:

Appalachian Regional Commission
1666 Connecticut Avenue, NW, Suite 700
Washington, D.C. 20009-1068

NOTE: The views, findings, conclusions, and recommendations expressed in this report are those of the authors and do not necessarily represent the official views, opinions, or policy of the Appalachian Regional Commission.

BEST COPY AVAILABLE

TABLE OF CONTENTS

Chapter		Page
1	CASE STUDY FINDINGS Case Study Methodology Lessons Learned Case Study Reports	1
2	ADAIR COUNTY TECHNOLOGY CENTER Adair County Board of Education Columbia, Kentucky	7
3	THE DAVID SCHOOL AND SUCCESS BOUND The David School David, Kentucky	23
4	MICHELIN LEARNING CENTERS South Carolina Office of the Governor/Michelin Tire Corporation Greenville, Anderson, and Spartanburg, South Carolina	51
5	MOBILE TECHNOLOGY PROJECT Towns County Middle School Hiawassee, Georgia	69
6	PARTNERING WITH PARENTS FOR SUCCESSFUL EARLY CHILDHOOD DEVELOPMENT Tennessee State Department of Education Eastern Tennessee	91
7	SCHOOL OUTREACH PROJECT North Georgia Community Action, Inc. Jasper, Georgia	109
8	THE SCIENCE CENTER OF WEST VIRGINIA Alliance for the Arts, Ltd. Bluefield, West Virginia	129
9	SCIENCE AND MATH TO GO! Anderson Oconee Pickens Hub/Clemson University Clemson, South Carolina	147

CASE STUDY FINDINGS

This volume provides case study methodology, lessons learned, and summary information for each of the eight case studies conducted as part of an evaluation of education projects funded by the Appalachian Regional Commission (ARC) during the 1990s. The study—conducted by Westat, a Rockville, Maryland, research firm—was designed to examine the range of activities that projects used to enhance learning opportunities, the extent to which these activities were implemented, the accomplishments associated with these activities, and the strategies that projects used to sustain themselves beyond the ARC grant period. Of particular interest was the extent to which projects achieved the outcomes set forth in their original proposals to ARC—and whether the activities and benefits associated with the ARC grants have been sustained over time. In addition to a review of project and state documents, interviews with ARC staff and state- and LDD-level staff, and a mail survey of 84 projects, the evaluation included site visits to eight projects.

1. Case Study Methodology

The site visits were designed to allow for a more detailed examination of successful ARC-funded education projects, with an emphasis on the lessons learned by these projects and their efforts at sustainability. Eight projects were selected for intensive visits, and information gained through these site visits was summarized in a series of case studies. In addition, specific findings are used throughout the final report to illustrate key findings.

The following criteria were used to narrow the pool of projects that were to be considered for a site visit:

- Projects had to still be in operation (full, partial, or changed). This was ascertained through telephone contacts conducted by Westat in November 1999.
- Projects had to have achieved at least some of their stated goals. This was ascertained through a review of project documentation and telephone contacts conducted by Westat in November 1999.
- Projects had to have focused on service-delivery or capacity-building, or other non-construction projects. This was ascertained through a review of project documentation.

- Projects had to have been serving distressed or transitional counties (or serving a multicounty region with at least some distressed or transitional areas) at the time of the grant award.

Thirty-four projects met these requirements. From these, projects were then selected to represent a range of the following:

- ARC project type—i.e., secondary education, adult literacy, math/science education, basic skills, distance learning, elementary education, preschool, educational partnerships, and dropout prevention.
- States, with Commission projects representing the states in which they are located.
- Project scope and size, measured by grant amount and number of counties or breadth of the region served.
- Grantee organization types—i.e., schools or districts, state government, economic or community development organizations, postsecondary institutions.

Eight primary sites and six alternates sites were selected. Following a brief telephone call to ensure that projects were willing to host a site visit and that ARC-funded activities were still in operation, the original eight primary sites were selected as the final case study sample (Exhibit 1).

Exhibit 1. ARC Case Study Projects

Michelin Learning Centers, Greenville, Anderson, and Spartanburg, South Carolina
Mobile Technology Project, Hiawasee, Towns County, Georgia
Partnering with Parents for Successful Early Childhood Development, Eastern Tennessee
School Outreach Program, Jasper, Georgia
Science and Math To Go!, Clemson, South Carolina
Science Center of West Virginia, Bluefield, West Virginia
Technology Center Project, Adair County, Kentucky
The David School/Success Bound, David, Kentucky

Teams of two site visitors spent 2 days at each of the eight sites. While onsite, the evaluation team met with project directors and other key staff, interviewed or conducted informal focus groups with project beneficiaries, including teachers, students, families, and adult learners, and visited facilities supported through the grants. The resulting case studies were reviewed for accuracy by each project's primary respondent. Abstracts for these case studies are provided following the lessons learned.

2. Lessons Learned From Case Studies

During the site visits, local stakeholders were asked to identify any project-related lessons they had learned that might be of use to other ARC-supported educational projects. Although some of these lessons were specific to a particular project, several themes emerged across the majority of sites that were visited. This section outlines some broader practices that may help future grant recipients maximize the likelihood that their projects are successful and sustainable.

Clear Vision and Realistic Goals. Many of the grant recipients stressed that even before a project begins, there should be a clear vision of what the project hopes to accomplish. The project's vision, purpose, activities, and intended outcomes should be clearly articulated to project staff, participants, and the surrounding community. Furthermore, this vision should be consistent with local needs. Finally, the vision should include clear and measurable goals—and a means of assessing whether or not they have been met.

Community Buy-in. One of the most consistent themes that emerged during the site visits was the need to cultivate community support for the project. Community stakeholders were most likely to be supportive when they perceived that the project was providing a service that was responsive to local needs. One project director noted that because "small communities tend to rely on each other," it was important to assure that key stakeholders were involved in the planning process. This involvement can take many forms, including soliciting local leaders for the advisory board, engaging local businesses as project partners, having frequent meetings with key stakeholders, and being responsive to stakeholders' input. Most noted that community stakeholders were most likely to take ownership of a project if an effort was made to provide services consistent with the community's perceived need.

Thorough Planning and Design. As described in Chapter 3, the most prominent barrier that projects identified was underestimating the amount of time required to implement a particular task. It is therefore not surprising that case study participants emphasized the need to set aside ample time and resources for designing and planning a project. Participants in several sites emphasized that project success requires the clear and calculated framing of project aims. For example, staff may be more willing to support a new approach if they know ahead of time why a specific course of action is being recommended—and how it will ultimately benefit the community.

Several projects suggested conducting a comprehensive needs assessment to maximize the likelihood that the resulting approach matches the needs of their intended beneficiaries, to examine potentially replicable models, and to research different potential vendors. Many projects indicated that such planning should also include some consideration of how the project will be evaluated over time. Indeed, several of the projects had used their needs assessments to collect baseline data that could eventually be used to gauge their long-term impact.

Specific Target Population. Several sites stressed the importance of specifying the distinct community segments that are to participate in and benefit from project-related activities. For example, one project, designed to increase students' exposure to and knowledge of computers, recognized that with limited resources it would only be able to serve a small number of the students. As a result, project staff determined ahead of time which group of students would most benefit from the available resources. Another project, designed to intervene with students at risk of not completing high school, eventually decided to focus its efforts on those students who had already dropped out (as opposed to also providing services to those students who had been suspended from school or were missing school for medical reasons).

Others noted the difficulties associated with getting intended beneficiaries to participate in project-related activities. For example, several case study sites indicated that some parents were reluctant to engage in any activities associated with their child's school (especially if they themselves had had bad experiences in the same educational institution). They recommended that future projects develop creative mechanisms (e.g., intensive marketing and advertising) aimed at locating and engaging at-risk families.

Tailored Approach. Case study participants also emphasized the need for projects to anticipate—and make adjustments for—the needs and capabilities of their intended beneficiaries. For example, one case study site noted that providing educational services to individuals who had not been in a school setting for many years was made easier by designing non-threatening learning spaces and developing a curriculum that accommodated various learning styles. Other projects noted that materials must be developed to be at the appropriate skill-level for the participants—e.g., in areas with high rates of illiteracy, project materials should be at a very basic reading level. Finally, several case study sites emphasized that services in isolated communities be provided in such a way that they are accessible to as many prospective beneficiaries as possible. When this is not possible, they suggested using formal or informal methods to transport community residents to and from a central site.

Staff Skills and Commitment. Ultimately, the implementation of project activities must rely on the front-line staff responsible for providing services. Many of the projects we visited emphasized

the importance of selecting staff who have an optimal combination of academic, technical, and interpersonal skills, as well as a passionate commitment to serving the community, all of which are necessary for working with at-risk youth and adults. The degree to which each of these qualities mattered varied from project to project. In general, we found that staff who worked directly with participants had to be technically oriented, organized, flexible, adaptable, and able to relate to people at various levels within the community. Equally important, these staff frequently had to be willing to put in long days and be unafraid of going into unknown—and potentially dangerous—situations. Finally, it appeared that staff were often most successful when they came from within the affected community. This knowledge of the history and customs of the locale was sometimes what was needed to give staff a "foot in the door," since it served as something that families could relate to and trust.

A number of sites acknowledged that the need to hire the best staff often had to be weighed against the low salaries that grant recipients were typically able to offer. At the time of the site visits, several projects were barely able to match the wages being offered by other local public (e.g., hospitals) and private (e.g., fast food establishments) entities, thereby complicating their efforts to hire and retain qualified staff.

Strong Leadership. In addition to having a highly qualified and skilled staff, projects benefited from strong leadership that keeps staff motivated and focused. Successful project leadership generally required someone with drive, persuasiveness, and strong organizational skills who could coordinate the activities and negotiate the concerns of a variety of interested parties (e.g., school administrators, faculty, parents, local businesses, and industry). Some projects also emphasized the need for having a leader who could convey the importance of the effort to local (or state) leaders as a means of ensuring sustainability after ARC funding ended.

Integration of Services. A number of projects provided a service that was easily integrated with those already being offered through another community agency. In such cases, participants and community stakeholders were often better served (since they did not have to travel lengthy distances to receive a new service) and costs were often consolidated. One form of integration that was common across the case study sites was cross-referral—e.g., after identifying a specific need, an agency would refer an individual to another service provider. This ability (and willingness) to integrate services required that all agencies have an awareness of how their informal "partners" could assist a particular individual. Several projects suggested that having key members of their staff active in other agencies (e.g., serving on a board of directors) was one means of ensuring collaboration. (It is worth noting that at least one site suggested that there was sometimes a need for a clear distinction between the ARC project and other

agencies—especially in cases where project participants potentially have something to fear (e.g., loss of a child) from an external agency (e.g., social services).)

Focus on All Family Members. A number of projects indicated that many of the education problems they were confronting required intervention for both the students and their families. As such, merely providing short-term services to one child was not enough to change how the family functioned, particularly when parental academic encouragement was required. The best of these projects appeared to take a proactive approach to tackling intergenerational issues (e.g., illiteracy, low self-esteem, lack of job skills) by encouraging parents to serve as educational role models for their children—and vice versa.

For example, one project that was seeking to increase parents' involvement in their children's schoolwork would not allow students to receive a laptop computer for home use until after at least one of the parents had received training and signed a permission form. According to the project director, this was also done to maximize the likelihood that parents would also make use of the computers, and thereby elect to further their own education. In another project, preference for admittance to an alternative school was given to students whose parents were interested in furthering their education or would be contributing members to the school. This policy reflected the director's belief that the school alone could not successfully educate a child. The high proportion of mail survey respondents that sought to simultaneously tackle a combination of youth and adult-oriented objectives provides evidence that this dual focus was prevalent in many of the projects in the study sample.

Project Evaluation. Timely and robust evaluations can help projects determine whether—and to what extent—their primary goals have been attained. These data can then be used for a variety of purposes, such as to identify and correct operational inefficiencies (e.g., terminating inefficient activities) and to attract additional funding from other sources. Although we found few examples of strong evaluations, many of the case study sites indicated that they would have benefited from having given more thought to evaluation at the outset of their projects. For example, one project had not considered evaluation a priority. With limited resources, they have been more inclined to ensure that services are provided to beneficiaries. However, project staff do appreciate that having more and better outcome data would enable them to garner more funding.

Nevertheless, individual projects, like the ARC itself, face issues of attribution. When beneficiaries of ARC projects are recipients of assistance from other sources, project staff are faced with difficult evaluations to conduct. This, then, may be another area for ARC to provide technical assistance.

Adair County Technology Center

Project Location	Columbia, Kentucky
Grant Recipient	Adair County Board of Education
ARC Number	CO 11256-I
ARC Project Type	Secondary Education
Grant Amount	$100,000
Matching Funding	$70,000
Dates of Site Visit	May 3-4, 2000
Site Visitors	Brian Kleiner and Nicole Bartfai

Project Abstract

The Adair County Technology Center project, successfully sustained to this day, was initiated in 1993 to address the problem of graduating secondary students inadequately prepared for the technically trained workforce of the 1990s. The primary aim of the project has been to expose students to a variety of technology-oriented career paths to make way for their transition into technical fields either in the workforce or else in postsecondary educational settings. Through their hands-on experience in the technology education courses, students are afforded opportunities to acquire new technical skills that may help to prepare them for the workforce or postsecondary education. The courses prepare students by stressing independent thinking and problem-solving and offering new kinds of knowledge, as well as practice in team-oriented activities.

The project has proven to be a valuable educational venture that has impacted a small Appalachian community in Kentucky. Most significantly, the center exposes large numbers of students to an array of technology-related fields. The center has served roughly 150 students per year since its inception. The enthusiasm generated by the center's instructor and its courses should continue to help to propel at least some students toward career paths in those directions.

BEST COPY AVAILABLE

Adair County Technology Center
Adair County Board of Education

A. Background

Community Characteristics

Adair County sits on the western edge of Appalachia within Kentucky. Its population is close to 15,000, with 3,800 people living in Columbia, the county's seat and largest town. Like many Appalachian regions, Adair County suffers from high unemployment (currently at 8 percent—twice the national average). In the mid-1990s, many jobs were lost when the companies Osh Kosh B'Gosh and Fruit of the Loom, major sources of employment in the county, moved their plants out of the state. Farming is still an important feature of the county's economy, although many small farms are struggling and tobacco farmers have had to size down considerably.

Besides farming, the leading industries in the county include manufacturing, services, wholesale and retail trade, and government. Adair County has recently invited in a new federal prison, which is in construction and should be a source of many new jobs. Given the relative lack of employment opportunities in the county, many young people must leave in search of jobs elsewhere.

There is one high school in Adair County, which currently houses around 800 students. The student population at Adair County High School is representative of the county's population as a whole. The large majority of students are white, with 17 black and 2 Pakistani students. Nearly 45 percent of students at the high school receive either free or reduced-price lunch, a rough indication of the county's level of poverty. In 1999, 46 percent of graduated seniors went on to some form of postsecondary education, a relatively high percentage in the state of Kentucky.

Characteristics of the Grant Recipient Organization

The ARC grant recipient for the Adair County Technology Center was the Adair County Board of Education, which presides over 2,500 students county-wide, including the high school and five

elementary/middle schools. The Board of Education was responsible for controlling grant funds and overseeing project design and implementation.

The project was spearheaded under the strong leadership of the project director, who was then Adair County High School's technology coordinator, and also served as the school's school-to-work and vocational coordinator. The project director was responsible for the overall coordination of the project, including planning, implementation, staff development, purchasing of equipment and materials, reports, and evaluation. It was under her persuasive and extremely organized charge that the project was carried out.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

In the 1990s, the United States experienced the rapid expansion of technology-oriented industries requiring employees who were highly skilled in technical fields. At the same time, too few students graduating from secondary schools in the Appalachian region of central Kentucky were adequately prepared for these kinds of employment. Not only did they lack the basic technical skills required for jobs in technology-related industries, but many were never afforded the opportunity to be exposed to such skills and career paths in high school.

The growing need for a workforce with greater competence in technical fields led to the realization among industries and educators that training and preparation must begin within the schools. Students must, at a minimum, be exposed to a variety of technical fields, to eventually lead some of them along technology-related career paths and to satisfy the needs of industry for skilled workers.

Although a vocational/technical feeder program is available for Adair County High School students, it is located in neighboring Russell County and many students have class conflicts or are reluctant to commute the long distances necessary to attend. In addition, some Adair County High School students are deterred by the local stigma attached to attending the vocational/technical school.

Approach

The Adair County Technology Center project was initiated in 1993 to address the problem of graduating secondary students inadequately prepared for the technical workforce of the 1990s. The primary aim was to expose students to a variety of technology-oriented career paths to make way for their transition into technical fields either in the workforce or in postsecondary educational settings. The project involved the installation and implementation of a technology center within the county's high school, as well as an adjoining telecommunications/conference room. The telecommunications/ conference room was designed to function as a meeting place for the school and community especially because there were few alternatives at the inception of the project. Project planners were hopeful that the conference room would be used for training seminars and presentation. The project's objectives were as follows:

- To allow students to explore a number of technologies that will be of importance in a modern technological society.
- To provide hands-on technical training to students in grades 9-12 that will provide a positive transition to postsecondary training or the workforce.
- To provide opportunities for students to develop a knowledge base about technology, develop critical thinking and problem-solving skills, and prepare them to accept and understand new technologies.
- To provide alternative technical activities for any students with disadvantages or disabilities.
- To provide positive experiences to improve students' self-esteem and self-confidence.
- To assist students in future educational and career decisions.
- To provide opportunities for technical skills to be integrated into other academic areas.
- To provide school and community access to research, database search, capabilities for two-way interactive video, and training facilities through the use of a KET Star Channel and a telecommunications classroom component.

Status at the Time of the Site Visit

The technology center was still in full operation at the time of the site visit, now supported and funded entirely by the Adair County Board of Education. It was noted by the high school principal that the technology center and the classes held within it have become an established part of the school's curriculum. The work carried out in the center today is much as it was at the time of the ARC grant, with

only a few significant modifications, including the addition of a second course offering and minor changes in course curriculum.

C. Activities Undertaken as Part of the ARC Project

Project Planning and Design

The success of the technology center at Adair County High School was due in large part to the level of planning and design that occurred before its implementation. Project staff carried out research on current needs, potential vendors, and curriculum, and the carefully crafted project consequently faced few obstacles in its implementation. In addition, planning and design were highly collaborative, inclusive not only of school faculty and administrators, but also of local businesses, parents, and community members. The project director noted several factors having to do with planning and design that were critical to the project's success.

Community support and buy-in. The project director did not underestimate the importance of a collaborative and inclusive process involving a host of players within the local community, including school administrators, faculty, students, local businesses, parents, and other community members. Community support and buy-in were accomplished in a variety of ways.

First, the project director formed an advisory committee consisting of the superintendent, the high school principal, teachers, and counselors, local business representatives, parents, and others in the community. According to the project director, it was not difficult to attract committee members because there was a growing interest in and enthusiasm for technology education, especially among local businesses that recognized the expanding need for a more technically trained workforce. The committee of over 25 members met regularly and often during the formative phase of the project. Not only did the committee make decisions on project design, but perhaps more importantly, its varied members helped to galvanize support for the technology center across the community.

Second, collaboration and buy-in was fostered by a community-wide survey asking community members, businesses, school administrators, parents, and students what sorts of technology should be taught in the new technology center. Eighty-four surveys were distributed to community members and businesses, and 58 of them were collected. Of the 53 surveys given to Adair County High School faculty

and staff, 24 were collected. The surveys revealed opinions about important technical fields and helped to shape decisions regarding the technology center's curriculum. Further, the surveys generated considerable support and enthusiasm for the mission of the center. For example, the project director noted, "It was the first time the business community felt like they had a say in things relating to school."

Third, to gain the support and partnership of local businesses, the project director held regular breakfast meetings with local business representatives. These meetings ultimately led to the procurement of $19,000 in donations for construction of the teleconference classroom (including $10,000 from IMO Industries, $2,500 from Osh Kosh B'Gosh, and $1,000 from First National Bank). In addition, nine local businesses made in-kind contributions, such as the supply of doors, painting, carpet, dry wall, and ceiling tiles.

Needs Assessment. According to the project director, their advance research into current needs, curriculum, and vendors was critical to avoiding later problems. A needs assessment was done at Adair County High School (before applying for the ARC grant), and the survey discussed above was instrumental in determining technology domains of interest and importance to community members. In addition, a team of advisory committee members made several site visits to three magnet schools in Louisville that have technology centers (Southern High School, Seneca High School, and Nelson County High School) that could serve as models.

Selecting a Vendor. In order to select a vendor, advisory committee members visited technology conferences and trade shows. The project director explained that the aim was to choose a single vendor that would be able to supply everything needed for the technology center, including equipment, furniture, and curriculum. The advisory committee reviewed applications in response to an RFP, and references were solicited from previous customers of candidate vendors. Potential vendors visited the school to make presentations before the advisory committee. In the end, the vendor selected was Southern Educational Systems (educational and industrial training equipment specialists). The project director noted that the lack of problems encountered with the work done by this vendor resulted from their careful research.

Installation

The Adair County Board of Education approved $75,000 to renovate the space needed for the technology center. The facilities committee (a subgroup of the advisory committee) consulted with an

engineer to draw up rough sketches of the layout of the facilities. Final drawings were then approved and submitted to the state department for final approval. Due to fire code restrictions, however, the facility required greater renovation than expected, and the installation of the technology center was postponed for several months.

In the end, the technology center was installed in a spacious room on the ground floor of Adair County High School. The enthusiasm of the community was in evidence during weekends, when volunteers from the community helped with renovating and furnishing the center. Equipment in the center included such technologies as a laser, a computerized mini-milling machine, a VHS professional camcorder, an audio system, a wind tunnel, and computers and software for desktop publishing, graphics, computer-aided drafting, electronics, and flight simulation. Equipment was installed at stations (called "modules") evenly spread out within the center. Each station contained ample surface area for work space and equipment.

Technology Center Instructor

The project director said that care was taken to select an instructor with a strong technical background and solid teaching and people skills. The qualifications sought for the technology center's instructor were as follows:

- Certified with a minimum of an Industrial Education Orientation and Exploration certification with a suggested minimum three years of experience.
- Knowledge/background in the technological areas defined in the module descriptions.
- Working knowledge of computers and computer application programs.
- Current certification to teach Level I and Level II Technology Education programs.
- Willingness to participate in staff development workshops prior to and during implementation of the program.
- Willingness to attend special meetings and conferences sponsored by the local district or state department to upgrade skills.
- Willingness to open program open to visitors who have scheduled an appointment.
- Willingness to work with other faculty members, school district staff, local industry, and postsecondary institutions to share resources.

The instructor hired for the position, who was still teaching in the technology center at the time of the site visit, was well qualified. He has a B.S. degree in Industrial Technology Education and an M.A. in Education Technology. During the site visit, he demonstrated considerable enthusiasm for and commitment to the technology center and its purpose. He also appeared to be well-liked and respected by his students and colleagues.

Curriculum

The technology center was fitted with 14 modules; each devoted to a particular technical area. The course offered to 9th through 12th grade students was called Technology Education. During the course of a semester, students gained exposure to and experience in an array of technical fields, rotating from one module to the next, spending about 5 days on each. The modules selected by the advisory committee (with respect to survey results and other research findings) and instituted in the technology center are detailed below:

- Aerospace – the study of flight, aerodynamics, the operation of a wind tunnel, lift, drag, flight simulation, VFR, and FAA regulations.
- Applied Physics – the study of pneumatics, how gases and liquids are used and applied as power sources, and physical science concepts such as force, work, and mechanical advantage.
- Audio/Video – the study and use of radio broadcasting operations and productions, video production techniques, and video equipment applications.
- CAD (Computer-Aided Drafting) – the study of the basic concepts of drafting that leads to computer technology, using CADKEY 7.0 mechanical software and DataCAD 5.0 architectural software.
- CNC/CAM (Computer Numerical Control/Computer Aided Manufacturing) – the use of technology that allows a computer to control the operation of machine tools; the study and use of basic milling operations.
- Desktop Publishing/Graphics – the application of computer technology in the design; layout, and production of sophisticated publications.
- Electricity/Electronics – the study and use of basic theories and high-technology applications to construct, test, and analyze electrical and electronic circuits.
- Engineering Structures – an introduction to civil engineering whereby basic engineering principles are used in the design, construction, and testing of a bridge and other structures.
- Environmental Impacts – the study and use of an environmental trainer and water testing kits to determine water quality, filtration, purification, and the effects on the environment.

- Laser/Fiber Optics – the performance of experiments that demonstrate the principles of fiber optics and laser technology; the use of fiber optic cable to acquaint the student with the cable's ability to transmit the laser light.

- Biomedical Technology – the use of a biotechnology equipment kit to study living things and how biological systems can be affected, created, altered, and influenced by technology.

- Robotics – the study and use of the basics of robot design, control, and applications, using the Robot 2001 and student-designed projects.

- Telecommunications – the study of how orbiting satellites make global communications possible; the use of a television satellite dish to investigate, plot, and tune in over 200 KU-Band stations.

- Transportation/Production – the study and exploration of present and future transportation methods; the use of various tools such as band and scroll saws, drill press, sander, drill bit set, and other miscellaneous hand tools to produce student projects.

Technology Education was offered to students as an elective (Introduction to Computers was a required prerequisite). Given popular demand and constraints on student enrollment, juniors and seniors were given priority for course admission. The purpose of the class was to give students "hand-on exploratory experience in several technical fields that would better acquaint them with today's high-tech careers as well as prepare them for two-year or four-year postsecondary degrees, or for the world of work." The course was intended to be preparatory for college and the workplace, stressing responsibility and a greater degree of freedom among students, collaborative learning, and little lecture time in class.

The instructor for the course viewed his role as that of a facilitator, leading students along the path of independent self-learning. In addition, rather than formal tests, students were graded on projects, papers, and worksheets associated with each module. Students selected partners at the beginning of the course, and as in typical workplace environments, worked closely together toward common goals.

For each module, students were given worksheets that had to be completed. Worksheets contained questions and problems that address features of the relevant technical field and were checked by the instructor only once each 9 weeks, thus requiring students to exercise the responsibility needed for keeping up with class work. Worksheets were not graded, but rather were checked for completion and reasonableness of answers. For each module there was also a post-test, which was used to evaluate students' understanding of the module. Students were allowed to find answers through any means, including referring to books and collaborating with other students, thus simulating a work environment.

Telecommunications Classroom

At the time of the ARC grant, Adair County had no location available for public meetings and small-group conferences. A telecommunications classroom was built next to the technology center to provide business and industry, municipal offices, and the local college with a site to be used for training courses, workshops, small-group conferences, and team meetings. Most of the donations from local businesses and industry ($19,000 in total) were spent on construction of the telecommunications classroom. As is discussed below, the room did not live up to the expectations held for it, and has been used only infrequently by the community since the time of the ARC grant.

D. Problems Encountered

As mentioned earlier, installing the technology center took 6 months longer than expected, because of firecode restrictions and the need for more extensive renovation than planned. According to the project director, this might have been avoided by consultation earlier with an architect.

Telecommunications Room

After the telecommunications room was installed, new state regulations requiring that school doors be closed after school and that all school visitors signed in at the front office. This hindered the business community and other community members from using the telecommunications/conference room as easily or frequently for meeting space. In addition, a more convenient meeting place was soon thereafter established at nearby Lindsey-Wilson College. Although the teleconference room has been used rather infrequently by the public through the years, it continues to be used within the school for special guest lecturers and class presentations.

Buy-in of Educators

Although parents and local businesses and industry quickly recognized the significance of the technology center, according to the project director it was harder to sell its merits to the education community (e.g., faculty, administrators). In any event, the project director noted that it was crucially

important to persuade the superintendent of the center's value, since his support trickled down to administrators and faculty and quieted their resistance.

Need for Upgrades and Repair

Given the costs of maintenance and repair, as well as the rapid pace of technological change, the center has had to grapple with the need for keeping its modules maintained, up-to-date, and relevant. This, of course, requires considerable funding, and the center has had to make difficult decisions about which modules to maintain and update. For example, the robotics module within the technology center included a programmable robotic arm that was in disrepair. This module was (and continues to be) inactive, since the funding was not available for the repair.

Adult Education Technology Course

One of the original aims of the project was to offer the center to adults in the community for their continuing education. In 1995, a technology education course was offered to adults in the evenings 4 hours each week for 6 weeks. The course was similar to the one offered to high school students, and 11 adults were registered. However, many of the adults were disappointed to discover that the course was not devoted to teaching computer skills (e.g., word processing) rather to exposing the learner to various technologies. The adult course followed the same curriculum guidelines as the Tech I course. Although the course was run to completion, it was not offered a second time.

E. Evaluation and Dissemination

Evaluation

No formal evaluation of the project was carried out. However, end-of-course evaluations were collected from students each semester, and the feedback helped the instructor to shape curriculum changes.

Dissemination

The Adair County Technology Center project's success led to a considerable degree of attention and interest within the community and beyond. Several presentations about the project were made at statewide conferences and workshops, such as the Kentucky Vocational Conference and staff development day in Elizabethtown. In addition, when staff from seven surrounding counties came to Columbia for regional staff development in the summer of 1995, many teachers attended the technology center to observe and experiment with the 14 modules. Further, many (supportive) articles were written about the technology center in local newspapers.

F. Sustainability and Project Expansion

Sustainability

As noted earlier, the Adair County Technology Center has continued in operation since the time of the ARC grant. This is due mostly to the adoption of the technology center as part of the high school's curriculum by the Adair County Board of Education. At the time of the ARC grant, the Board was fully in support of the center and was aware that it would need to take over funding after the ARC grant ended. The Board provides $1,500 annually for center upkeep and repair, and additional funding is available through Perkins Title II grant money to purchase supplies and to replace nonconsumable items. The center instructor's salary is paid also by the Board of Education.

Another aspect of sustainability involves persuading students to enroll in the technology education courses, since they are only offered as an elective. One way that high enrollments are sustained is by word of mouth – students who have taken the course recommend it to friends. Indeed, interviews with students in the center revealed that most of them took the course because a friend recommended it. Further, many students are exposed to the technology center when teachers bring their classes to the center for specific purposes. For instance, one English teacher brought her class to record student speeches in the "radio room" (used for the audio and video module).

One way the instructor garnered interest in technology education courses and increased enrollment among the school's students was to expose them to some of the more compelling activities featured in the technology courses. For instance, each semester there is an on-campus competition called

the "egg drop," relating to the Research and Design module, where students in the course compete to see who can drop encased eggs from high distances without breaking them. All students in the school are invited to attend and observe. Similarly, this year Tech I students will participate for the first time in a CO^2 rocket car competition, where wooden cars constructed in class and powered by CO^2 cartridges will be raced on school grounds.

Expansion

The technology center's purpose and workings have changed little since the time of the ARC grant. Most notably, in 1997 a second elective course, called Technology Education II, was added to the school's curriculum. This course is structured like Tech I, but focuses more in-depth on a subset of the modules, such as computer-aided drafting, radio broadcasting, and aerodynamics. Prerequisite to this course is completion of Tech I. In 1999, almost 20 percent of students who had taken Tech I went on to take Tech II.

There have been minor changes over the years, but the original Tech I course curriculum remains basically the same. Tentative future plans for the center include adding a technology program at the 7th and 8th grade levels (a middle school is located a block away from the high school), and expanding the courses offered to include Tech III and Tech IV. These new advanced courses would be more highly specialized, with focus on particular technical fields. For instance, the instructor mentioned the possibility of a Tech III course focusing on communications, with emphasis on radio and video production and computer-aided drafting.

Due to restrictions on cost, however, certain plans for module changes and upgrades may be stymied. For example, the instructor noted that whereas radio production has moved toward digital technology, upgrading the radio module to digital technology might prove to be too expensive. Similarly, the instructor would like to add a module offering a programmable lathe, but this machine is currently too costly.

G. Accomplishments/Outcomes

The most notable accomplishment of the Adair County Technology Center is that many students have been exposed to an array of career paths in technical fields. The center has served roughly 150

students per year since its inception. Without the center, most students would not be aware of the kinds of technology-related careers available to them. Further, the center has been able to generate the enthusiasm necessary among students to propel them toward careers in technology fields. Students interviewed confirmed this, all stating that they liked the course. Many students attending Tech I said that they planned to enroll for Tech II. Of the 99 students currently taking Tech I, 58 have signed up to take Tech II during the 2000/2001 school year. In addition, course enrollment figures for the past several years have increased significantly, another indication of the technology center's success.

Through their hands-on experience in the technology education courses, students are afforded opportunities to acquire new technical skills that may help to prepare them for the workforce or postsecondary education. The courses prepare students by stressing independent thinking and problem-solving and by offering new kinds of knowledge, as well as practice in team-oriented activities.

Although no numbers were available, the center appears to be achieving the aim of encouraging at least some students to choose careers in technical fields. For example, the instructor mentioned three previous students who will soon be studying engineering at the University of Kentucky. One student went on to the Somerset Technical College to study industrial maintenance. He later joined the Army Corps of Engineers and is now studying to become an engineer. Also, the principal noted that interest in math and science has increased at the school, as have math and science scores on standardized tests, attributable in part to the technology center.

Among other accomplishments, the technology center's desktop publishing and graphics capabilities are now being employed by Tech I students to produce a school newsletter that features upcoming events, a message from the principal, announcements of student awards and distinctions, and other news. At the time of the site visit, three newsletter issues had been released at a rate of one every other month.

H. Lessons Learned by the Project and Recommendations for Other Communities

In general, the success of the technology center project was due to the confluence of a variety of factors, including strong leadership and organization, community buy-in and collaboration, and thorough planning and design. The qualities of the instructor and the nature of the course pedagogy and curriculum were also factors contributing to the project's success.

Strong leadership and organization are necessary. The successful technology center requires a leader with drive, persuasiveness, and strong organizational skills. This person must be able to coordinate the activities and negotiate the concerns of a variety of interested parties, such as school administrators, faculty, parents, and local businesses and industry. The project director for the Adair County Technical Center embodied these skills and was able to shepherd the project along a successful track.

Emphasize community buy-in and collaboration. A technology center is unlikely to succeed without the buy-in and collaboration of the local community. Achieving community buy-in requires finding ways to involve community members in and inform them about the planning and establishment of a center. For the Adair County Technology Center, this was done by bringing community members onto the advisory committee, conducting a survey, and informing the media about the project.

Also, once in operation, schools with a technology center should be receptive to the concerns of local communities. For instance, the instructor for the Adair County center explained that a local representative at IMO Industries (a leading employer in the county) complained to him that "kids can't even read a ruler these days." Responsive to this comment, the instructor said that every semester he now reviews in his classes how to read a ruler to within 1/16 of an inch.

Thorough planning and design are critical. Another essential for success is thorough planning and design. First, as noted by the project director, success requires the clear and calculated framing of project aims. One should have good answers to questions such as Why do we want to do this? and How will it benefit students? Second, planning and design should include looking at a variety of other sites with technology centers, conducting a needs assessment, and researching different potential vendors. Third, the local Board of Education should be made aware up front about the long-term fiscal responsibilities associated with a technology center, and it should be committed to long-term support.

In addition, planning should include thoughtful consideration of features of the curriculum within the technology center. The curriculum should be context-specific, based on those technical fields that are most likely to be of practical value to students within their communities. To illustrate, the instructor gave the example of a hypothetical technology center, based perhaps in Nevada, where the curriculum might include, say, a module on solar energy.

Technology classes should foster skills and activities found in college and the workplace. In order to accomplish the aim of career development, courses in technology centers should foster the kinds of learning and skills at use in postsecondary educational settings and the workplace. This includes independent thinking and problem solving, collaboration, and an emphasis on individual responsibility. Instructors should be aware that students have different learning styles, and some will like nontraditional modes of teaching and learning more than others.

Select an instructor with the right qualifications. Finally, the success of a technology center depends upon having a good teacher. This person should have a degree in industrial technology and a strong background in math and science. He or she should also be able to handle multiple tasks, be well-rounded, and have a good rapport with students and the community. In addition, since technology changes so rapidly, an instructor should keep current on his or her knowledge and skills (by attending conferences, workshops, etc.).

I. Summary and Conclusions

The Adair County Technology Center has proven to be a valuable educational venture that has impacted a small Appalachian community in Kentucky. Most significantly, the center exposes large numbers of students to an array of technology-related fields. The enthusiasm generated by the center's instructor and its courses should continue to help to propel at least some students toward career paths in those directions. Other Appalachian regions seeking to prepare their young people for technology-related careers would do well to emulate Adair County's Technology Center project.

The David School and Success Bound

Project Location	David, Kentucky
Grant Recipient	The David School
ARC Number	KY 12112-95-1 & CO 12632-97-1
ARC Project Type	Basic Skills
Grant Amount	$70,000
Matching Funding	$24,000
Dates of Site Visit	April 10-11, 2000
Site Visitors	Nicole Bartfai and Gary Silverstein

Project Abstract

The David School, located in Floyd County, Kentucky, serves as an alternative school for students who are in danger of dropping out of the public school system. With ARC assistance, the David School initiated a pilot project, Success Bound, which added supplemental training in the area of pre-employment/work maturity and job-specific skills. Initially, only 40 students were enrolled in the Success Bound component. Since then, it has been thoroughly integrated into the David School approach. Students are provided academic, vocational, and job training skills through a variety of educational and hands-on experiences. Equally important, they are required to create a postsecondary plan that identifies specific long-term educational and professional goals—e.g., vocational school, college or community college, military, employment. This plan focuses attention on how the David School can best serve a student's long-term needs—and serves as a standard against which "success" can be measured.

BEST COPY AVAILABLE

Success Bound

The David School

A. Background

Community Characteristics

The David School is located in Floyd County, Kentucky, in the heart of Appalachia. It is considered part of the Floyd County education system, but it operates as a private, nonprofit, alternative school for secondary students. Approximately 70 students are enrolled in the school, most of whom live in Floyd County (other students come from the surrounding Magoffin, Knott, Pike, Martin, and Johnson counties). During the previous decades, this area of Kentucky was dominated by the coal mining industry, and many of the small towns were once coal towns owned and operated by mining companies.

Floyd County is predominately white, with only 1 percent of the population being nonwhite. The county has high illiteracy, dropout, and poverty rates. In the 1990 census, Kentucky had the highest illiteracy rate in the nation, andwith Floyd County had a 50.8 percent dropout rate of persons 25 years of age and older. According to the director of the David School, the dropout rate has continued to increase, in part because recent state education reforms have forced principals to keep attendance high and test scores up, which is resulting in more students dropping out of school. The region's poverty rate is also high—31 percent of the population live below the poverty line, and 43 percent of residents under the age of 18 live in poverty (U.S. Census estimates, 1995). The estimated household income is $21,792 (U.S. Census estimates, 1995), and in 1994, the unemployment rate was 7.6 percent. The population of Floyd County has remained relatively stable during 1990-97, but the county did experience a 10 percent decline during 1980-90.

Characteristics of Grant Recipient Organization

The David School received 2 years of funding from the Appalachian Region Commission to implement the Success Bound program to a subsection of students during the 1994 and 1995 school years. The David School is a private, nondenominational, nonprofit education provider, founded in 1974. It provides students with an alternative to public education with a heavy emphasis on vocational and job skills training. The school serves approximately 100 students annually who have already dropped out—

or are at risk of dropping out—of middle or high school. Prior to admission, students undergo a comprehensive screening process to assure that they meet the school's admission criteria, including (1) a need for remediation (approximately two grades below his/her appropriate level), (2) a need for financial assistance (at or below the poverty level), (3) an agreement by the student to work in collaboration with teachers to meet established short- and long-term goals (e.g., mastering division, college, employment), and (4) an agreement by parents to be active participants in their child's secondary education as well as participate in adult and continuing education classes.

David School staff include a director and principal (who both teach one class), a counselor, seven full-time teachers, a kitchen/food manager, and office support staff. The school operates under a common vision and philosophy that serves to keep the staff focused on their intended outcome of helping students in need. As is discussed throughout this case study, that common vision and philosophy have been molded, to a large extent, by the Success Bound program that was funded by ARC. Other components that make the David School unique are:

- The student-to-teacher ratio is 10 to 1.
- Meals are served in a family style environment, and students are expected to assist with food preparation and clean up.
- Every morning begins with an all-school assembly to discuss upcoming events and highlight the accomplishments of individual students.
- Students address the school's director, principal, and faculty by their first names.
- Faculty members meet on a regular basis to talk about each student. According to the school's director, these weekly meetings are critical to helping teachers "think outside the box" and for finding out how individual students are doing in other classes.
- Home visits are conducted by the staff twice a year. This practice, begun as a result of the Success Bound initiative, enables the principal, counselor, and teachers to further understand their students' educational and social needs. It also encourages the parents to become more involved in the school.
- Parents who lack a high school diploma or GED are strongly encouraged to enroll in the David School's adult learning facilities to further their own educational and vocational goals.[1]

[1] The David School, which operates 10 adult learning classes, is the only source for adult basic skills coursework in Floyd. The school enrolls 500 adults per year in this program. Parents who already have a high school diploma or GED are encouraged to attend a local community college.

- Preference for admittance is given to students whose parents are interested in furthering their education or will be contributing members to the David School community. This policy reflects the director's belief that the school alone cannot successfully educate a child.

- Students are expected to sign a contract when they begin the program. The David School currently operates under a waiting list, and many students have been placed on a lower priority because they do not meet all of the criteria for admission into David. (For example, parents might not be willing to participate in their child's education or students might not be willing to contribute to the school.)

The David School originally occupied abandoned coal company buildings—the company store, office, and movie theater, which were in operation during the mining era. The school also owned and operated a full service gas station. The station, which served to educate students and generate revenue for the school, was recently closed because its underground storage tanks did not meet U.S. Environmental Protection Agency (EPA) regulations. In 1997, the David School moved into a new $2 million dollar building that is vastly different from the original coal company buildings. It is nestled in a mountain valley directly up the road from the previous location in the town of David. The architecture is spacious and stylish with cathedral ceilings and views of the surrounding mountainside. There are several cabins on the school's grounds used for a variety of purposes, e.g., housing summer volunteers, accommodating teacher workshops, and serving as summer lodging for the Prestonsburg playhouse performers. An accompanying building was designed for the wood working class and will eventually have a computer lab for instructional technology classes. The cabinets that fill the kitchen area of the main school building and in other areas of the school were designed and constructed by students. Students have also contributed to other areas of the school (e.g., stairs, painting, drywall, electrical). At the time of the site visit, the students and teachers were working on landscaping the grounds.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

The David School was designed to address the needs of the surrounding community. At the time the school was founded in 1974, many of Floyd County's residents were undereducated, and this problem perpetuated itself with high dropout rates. The Success Bound program, initiated in 1994, takes the mission of the David School one step further by providing a framework for assisting students to prepare for life after graduation. According to the director, prior to Success Bound, the goal for most students was "getting to the finish line" (i.e., attaining a GED or high school diploma). However, many graduates

were uncertain of their plans after David School. With Success Bound, the goal was extended to include attainment of a specific educational or vocational goal after graduation.

Approach

The Success Bound program started as a pilot project within the David School. It was designed to add supplemental training to the school's curriculum in the areas of pre-employment/work and job specific skills. Initially, only 40 students were enrolled in the Success Bound component (the maximum number that could be supported with existing funding). Since then, it has become a part of the curriculum at the David School. Students are provided academic, vocational, and job training skills through a variety of hands-on experiences. Equally important, they are required to create a postsecondary plan that identifies specific long-term educational and professional goals, e.g., vocational school, college or community college, military, employment. This plan focuses attention on how the school can best serve students' long-term needs—and becomes a standard against which "success" can be measured.

Status at the Time of the Site Visit

The David School continues to provide hands-on educational experiences for students in Floyd and surrounding counties. The school recently moved into a new building with a modern computer lab and expanded vocational facilities. The new building has vastly expanded the school's capacity to meet the needs of the region's students. It has also further enhanced the likelihood that the David School will remain a permanent fixture in the Floyd County. The Success Bound program that started with a segment of the program's students has been fully integrated into the David School. As such, all students must now enter the school with a vision for their future.

C. Activities Undertaken as Part of the ARC Project

Intake Process

The intake process has become an important component of the Success Bound approach. Staff assess each student to determine his/her academic needs, interests, capabilities, and vocational potential.[2]

[2] The director notes that especially with the integration of Success Bound, the school is not in a position to accept some of the region's hardest-to-serve students (e.g., individuals with a history of substance abuse).

BEST COPY AVAILABLE

While referrals are taken from a variety of sources—primarily teachers, principals, and counselors—most hear about the school through word of mouth. The school accepts students from 9th through 12th grade, with occasional exceptions for 8th graders who are being held back for academic reasons. Interviews and home visits are conducted to obtain a better understanding of their needs and interests. Students and parents are expected to complete intake forms (Appendix A). These intake forms provide staff with detailed information regarding students and parents. For example, the students' intake form asks about their behavior, special needs, reason for interest in the David School, expectations of themselves and their teachers, and their relationship with their families. The parent intake form asks similar questions about the student, but also gathers information directly about the parent. For example, income level, highest grade completed, if they are enrolled in some type of school, and employment status. Each form contributed to providing the staff with an overall picture of the students and family prior to admittance into the David School. Prospective students also complete a diagnostic test to identify their strengths and weaknesses and tailor their coursework accordingly. Applicants can take a student-led tour of the school and are encouraged to shadow a David School student for a day.

Once accepted, students sign a contract that delineates the school's expectations and basic operating procedures (Appendix B). The students are responsible for selecting their classes. The David School does not break students into classes by grade or ability, but rather by scheduling limits and the student's personality. With only about 70 students, staff can create classes that will more than likely be free of conflict and include students who might interact well. At times, this presents a challenge for teachers because there may be three different grade/ability levels in one class. For example, one math class might include students who are learning fractions, pre-algebra, geometry, and trigonometry. As such, the teacher would be required to create lesson plans that cover all of the varied topics.

Assessment of Student Progress

Each student's progress is planned and assessed through the use of an educational plan and a student progress report. The student's educational plan includes information about the student (i.e., long-term goals, interest, and strengths) and a learner/instructor agreement. The learner agreement states:

> I have identified the goals below and I choose to work on them at this time. I understand that for the successful completion of these goals I will need to attend class____ hours per week, from _____ to _____ , complete my assignments, ask for help when I need it, and make a genuine effort to learn. If modifications need to be made in my learning plan, my instructor and I will make a new agreement.

The learner is asked to sign and date the agreement. The instructor agreement, which is viewed as being equally important, states:

> As the class instructor, I will do everything possible to help this learner achieve the following goals by providing appropriate instruction and monitoring the learner's progress at regular intervals. I understand that if modifications need to be made in the learning plan, the learner and I will make a new agreement.

The student progress report allows the teacher to provide the student, parent, and school administration with an overall view of the student's progress in class. The teacher indicates if the student understands the material, applies critical thinking skills, does assigned work, participates in class, and cooperates with teachers and other students. The teachers is also asked to comment on the student's conduct, attendance, and if he/she is keeping up with class requirements. At the end of the semester, the teacher also indicates whether the work accomplished is sufficient to grant credit for the semester.

Success Bound on Curriculum and Coursework

The Success Bound program was initially conceived as a pilot project that would only serve a portion (i.e., 40) of the school's students. The goal was to determine how successful these students would be with a more focused and formalized approach to preparing students with life after school. The Success Bound approach formalized the planning process and forced students to establish clearer benchmarks for themselves. Expectations for the students were higher than in previous years, raising the bar for the kids. Students were not just encouraged to have post-graduation plans, but also were expected to have outcomes for themselves. The postsecondary education plan details a student's long- and short-term goals, education needs to meet the long-term goal, and the preparation he/she has undertaken to accomplish set goal (Appendix C). This approach surfaced as the David School director recognized the need to become more accountable to funding agencies and potential funders.

Initially, funding limited the number of students in this pilot project; otherwise, this approach would have been available to all students. Students were selected based on interest in the program, as well as parents' potential involvement. In the initial years of Success Bound, the focus was limited to juniors and seniors. Students in this program were taught the core competencies (i.e., reading, math, science) and were tracked according to their postsecondary plan into one of the following areas:

- **Service Station Management and Basic Auto Mechanics.** Prior to the pilot project, the service station was primarily used to provide students with some real-world work experience

in customer relations and auto mechanics. With Success Bound, the service station curriculum was revised to provide targeted skills that could be used in a variety of local employment opportunities—e.g., customer service, bookkeeping. The curriculum for the revised program was developed in conjunction with a local vocational school (to maximize the likelihood that students would be prepared to complete more comprehensive coursework after leaving the David School. This program was discontinued after the closure of the service station (due to EPA regulations). In spite of the high costs associated with the renovations, the David School director was hopeful that the station would eventually be reopened.

- **Carpenter's Helper.** Under Success Bound, the carpentry course was modified to provide students with a specific task—building cabinets for the new school. Once the new school had been fully outfitted, the students continued making cabinets for low-income families. According to the instructor, the benefits are not limited to cabinet making, as students learn how to meet schedules and work as a team in an assembly line.[3] Students were also provided opportunities to participate in the construction of the new school building. At the time of the site visit, students enrolled in carpenter's helper were helping to assemble the floors, windows, stairs, and ceiling that would eventually serve as the school's carpentry workshop.

- **Apartment Maintenance.** This course is designed to teach students how to use common tools and repair items around the house. It developed out of the fact that many students were assisting, or assuming full responsibility, for maintaining their homes.

- **Computer Training.** Since moving into the new school, the computer training component has become an important new course for students. The lab is outfitted with state-of-the-art equipment, including a large monitor that allows students to view work being performed by their instructor. At the time of the site visit, students were being taught word processing skills. Depending on the demand, the skill level of the courses might increase. In addition, the school was preparing to connect the computers in the lab to the Internet. It is anticipated that this will substantially enhance the curriculum associated with the computer course.

- **Child Care.** Until recently, the David School housed a licensed preschool and kindergarten. Students looking to gain experience in working with young children had the opportunity to participate in a variety of activities, e.g., transportation, helping with arts and crafts, recreation, reading stories, serving as mentors. This course was discontinued when the David School closed its preschool in 1998.[4]

- **Food Preparation.** Students receive course credit for their food planning and preparation responsibilities Specifically, students are required to participation in a variety of food preparation activities, including preparing menus and shopping lists, shopping, cooking and food preparation, and clean-up.

Keys class. An important component of the Success Bound program was the Keys class. This class, now required of all David School students, is designed to create career awareness for the students. The curriculum for the class includes teaching students about:

---

[3] In an average month, the school's goal is to produce 20-30 cabinets.

[4] The preschool was closed after the local Headstart Program expanded, thereby diminishing the community's need for the David School's center.

- Making career decisions;
- Using the labor market information;
- Preparing resumes;
- Filling out applications;
- Interviewing;
- Being punctual;
- Maintaining regular attendance;
- Demonstrating positive attitudes an behavior;
- Presenting appropriate appearance;
- Exhibiting good interpersonal relations; and

Another part of the Keys curriculum includes teaching students listening and communication skills, which the principal viewed as being critical for students when trying to get a job or get into school. These goals are achieved through traditional teaching methods (i.e., lecture, videos) but also by bringing speakers into the class, taking field trips to local colleges, and providing community service, such as cleaning up the land around the school and in the community. This course provides students with the skills necessary to achieve established goals and expand their view of the possibilities available to them.

Partnerships

David School has established partners that assist the school on a daily basis. The Floyd County Board of Education provides bus transportation for David School students to a central locale (a convenience store not far from the school) in order for the David School bus to pick up students. The County also extends accreditation to the David School, and course credits between the two schools are interchangeable. There is no financial exchange in this partnership.

In addition to the Board of Education, the David School has developed ties with the county Department of Social Services. The David School has been able to make referrals as needed, and the department has served as a source of referrals to the David School.

Other partners include local community colleges—Prestonsburg, Moorehead State, Berea, and Mayo Technical School. As part of the Success Bound approach, David School staff aligned parts of their curriculum with coursework offered at these to prepare students for postsecondary challenges. Other

benefits have included increased access to the resources available on these campuses and periodic visits to the colleges as part of the Keys class.

D. Problems Encountered

The David School did not incur many problems in the implementation of the Success Bound approach. As such, the following implementation barriers pertain to the operation of the school itself.

"Those Kids"

Students who attend the David School are at times labeled as "those kids." The David School is perceived as a school for low achievers and/or for youth with discipline problems. The director commented that this label is often used by public school principals, teachers, and parents. During the site visit, several students even commented on their original impression of the school: "the school for dropouts" and "the dummy school." These students indicated that their impressions changed as soon as they visited the school. Unfortunately, this stereotype does keep some students from attending or parents from sending their children. This issue is dealt with on an individual basis. Using the strengths of the school (i.e., smaller class size) has proven to be one way to convince potentially hesitant parents or students to attend the David School.

Limited Support for Students at Home

All David School students come from low-income families whose members are often undereducated. In addition, many students do not receive encouragement from home, where there can be limited emphasis placed on education. The director indicated that parents who did not do well in school are less likely to view education as being critical to their children's success. In addition, parents may fear that, as their children gain vocational skills, they may be forced to leave the area to obtain gainful employment. (The area surrounding David School has limited employment opportunities and even fewer in highly technical fields.)

Staffing

Due to the limited financial reward for the school's faculty and the demands placed on these teachers, staff turnover has been a problem for the school. According to the director, teachers are asked to perform tasks that they would not normally encounter in traditional regular public schools (e.g., assisting the principal in home visits, helping in the kitchen, rotating on the bus and van schedule). In the past, some teachers who came from traditional public school backgrounds found they were unable to fit into the environment at David School. The principal commented that at the David School, "students feel as though they have voice in the school and it is expected of David School staff to treat students as young adults." According to the director, however, some individuals have difficulty with this concept. Nonetheless, the director indicated that the school has been able to retain a core group of teachers/staff (including some former students), thereby reducing the impact of such staff turnover on students.

Lack of Financial Support in the Community

The David School has earned the respect of the community but has received limited financial support. It is a continual struggle to determine how and where funding will come for the next school year. The David School director and staff work continuously to secure funding and raise public awareness about the school. Most funding is obtained from outside the state and from individual contributions; annually the school receives $50,000 in contributions.

Lack of Accreditation

The David School does not meet the state's education requirements (i.e., Kentucky's requirement for portfolio assessment for all students). The staff have resisted state accreditation because the school's mission is not completely aligned with Kentucky's educational guidelines and test requirements. This can be problematic when requesting funding from some foundations, since they only provide support to accredited schools. Only half of the teachers are certified, and this could cause additional problems in achieving accreditation. To get around this problem, the local school board has extended accreditation to David School, and this is recognized by local community colleges. The granting of accreditation from the local school board, which occurred in 1976, has opened more avenues for David School graduates.

E. Evaluation and Dissemination

Evaluation

The David School has not conducted a formal evaluation of the Success Bound program. However, the school is required to report annual statistics regarding the grades and postsecondary educational and vocational plans of all graduating students. This information provides insights into the extent to which students are meeting the goals outlined in their education plans and progress reports.

During the site visit, the director also expressed an interest in developing a postsecondary support network that could be used in part to document students' vocational and educational accomplishments (the school does not systematically monitor what happens to students after they graduate).

Dissemination

David School staff have received considerable attention and praise for their work. About 800 people a year visit the school, including Kentucky governors, administrators from other school systems, and reporters. The director's office contains numerous newspaper articles that have been written about the school. (At the time of the site visit, a reporter and photographer from the Lexington, Kentucky, newspaper was at the school preparing a story that appeared soon after.) In addition, a documentary that focused on four students was being filmed at the school. Through this attention, the David School has been widely disseminated as a success story for all of Appalachia. Even with all this attention, word-of-mouth continues to be the best source of dissemination within the community and outside the state, and the school's director continues to be its strongest advocate.

The David School director commented that they have received about 5 to 10 visits from others looking to replicate this approach. Most are outside the state, but several visits have been from local districts. One of the area school districts is interested in starting an alternative school and has approached the David School director for assistance. Despite their interest in the school, few steps have been taken to actually start the school, but David School staff have been eager to share their approach with other communities.

F. Sustainability and Project Expansion

Sustainability

As discussed previously, the ARC-funded Success Bound program has become a permanent and integral component of the David School's approach. Over time, it has become seamlessly integrated into the school's curriculum, transforming everything from the intake process to the day-to-day course offerings. Success Bound has even become a coined phrase at the school, with the road leading to the campus formally named "Success Bound Road." In addition, while a postsecondary plan was once recommended, it is now required as a condition of graduation. There is no question in the mind of the director and staff that Success Bound will remain a permanent fixture at the David School.

According to the director, the school's capacity to sustain itself over the longer term was also enhanced by the receipt of ARC funding and the successful implementation of the Success Bound program. The director noted that ARC funding has given credibility to the school, which, in turn, has been a useful tool for leveraging additional funds. In addition, the outcomes focus of Success Bound has made it easier for the David School to describe to foundations the specific long-term goals that its students are striving to achieve.

Project Expansion

The David School recently underwent a significant change when it moved into the new building. There are still projects surrounding that move that need to be addressed by the David School staff including the installation of the Internet at the school. Students will have access through the state-of-the-art computer lab. The lab is currently being used to instruct students on computer application programs and will be used in the future for students to access the World Wide Web. Delays have occurred due to problems between the installer and the telephone company, but these difficulties were in the process of being remedied. Other plans for the new building include the completion of the wood working shop (cabinet making) and the classroom/computer lab that will be installed on the second floor of that building.

The next step for David School in regards to project outreach includes working more with postsecondary institutions. At the time of the site visit, David School staff were seeking financial support

to strengthen the postsecondary component of the program. Additional plans consist of working more with parents and the community to increase involvement at the school.

G. Accomplishments and Outcomes

The David School has remained in operation for over 26 years. This alone is an indication of the success the school has experienced. Since the integration of Success Bound, David School has been more focused on what happens to students beyond high school—as opposed to just assuring that they attain the short-term goal of graduating high school. As such, the Success Bound program had a significant impact on the David School. Specifically:

- The curriculum went from book-specific to more transferable skills. For example, because of Success Bound, the gas station coursework emphasized hands-on experience in running a business and handling customer relations—skills that could be transferred to any business.
- The type of student who attends David School has also changed since Success Bound. Now with the full integration of Success Bound, parents and students know ahead of time what is expected—i.e., they must have a plan to continue after high school. Students who are now accepted at David must express an interest in long-term plans after high school.
- Success Bound also changed fundraising strategies. According to the director, the focus has shifted from telling stories about helping "hard luck kids" to telling stories about how David School has helped students prepare for a more promising future.

While data are limited, it was apparent after speaking with numerous students that the program has had a significant impact on its students. More often than not, students had a positive vision of what they would be doing after graduation (e.g., attending community or vocational school). Equally important, they were clearly enjoying their educational experiences (many indicated they would not have remained in any educational system were it not for the David School). Some attributed the success of the David School approach to the family-like atmosphere, others to the down-to-earth teachers, and still others to the small class sizes. No matter the reason, it was clear during the conversations with students that each had found a part of themselves that was once lost in the public school system—the feeling that they were and would continue to be successful.

Additionally, the impact on the students can be seen in their increased level of self-esteem. Staff commented that the students appear more self-confident and have more self-esteem then before the Success Bound approach. This may be attributed to the fact students have contributed in some way to the

building of the new school, and this has created a sense of ownership among students and staff. By increasing their level of commitment in the school and providing them a choice in coming to the David School, students have bought-in to its approach and take more responsibility for its overall success.

Another change was in linking student's schooling with the re-education of their parents. The David School has increased its focus on families being involved, not just in the activities at the school and their child's education, but on their own education as well. According to the principal, "It is working because you see the kids moving onto education opportunities and their parents increasing their opportunities." This change also appears to have affected the student-parent relationship. Several students commented that their parents had enrolled in classes and that they were closer with them since coming to the David School. They also indicated that their parents volunteer and come to the school for events, which had not happened when they were attending public school.

H. Lessons Learned by the Project and Recommendations for Other Communities

Have a vision and a common philosophy. The director suggested that in order for an alternative school to be successful, its mission must be clear—not only to faculty and staff, but to students, parents, and the surrounding community. Having a clearly stated philosophy has helped the David School stay committed to the common vision of helping students at greatest risk of leaving the public school system. A primary focus of the David School's philosophy is its emphasis on postsecondary plans, vocational training, and a back-to-the-basics approach to education. Further, the David School tailors its teaching style to the educational needs of individual students. Individualized goals are established for each student, and the grades that are assigned reflect the extent to which these goals are met.

Have a clearly defined population who will receive services. According to the director, alternative schools cannot try to serve all students in need of additional attention. Rather, to maximize their impact in the community, they must define the type of students they are qualified to serve. While the David School focuses on students who have recently dropped out or are at risk of dropping out, it is not able to serve individuals who have been removed from school due to serious behavior problems. Given its limited resources—and the educational needs of its students—the director indicated that David School cannot serve as a rehabilitation center for students with severe drug or alcohol problems.

Gain commitment from local board of education and community and business leaders. According to the director, establishing the need within the community is critical. An important first step is to gain buy-in from districts and other community and business leaders. The director suggested that creating a public alternative education program is far different from developing a privately, not-for-profit institution. While private institutions can determine whom they will serve, public facilities must meet state standards/guidelines. The David School did not obtain this level of commitment prior to their inception, but with time the Floyd County Board of Education has recognized the David School as an important supplement to the Floyd County Education System. Any student who leaves the public school for David is viewed as a transfer rather than a dropout.

The director also suggested that it has been helpful to have local leaders who are willing to advocate on the school's behalf throughout the community. These individuals have been asked to speak at official functions and break down barriers that might otherwise exist between the community and the school.

Develop ties with the county department of social services. The director emphasized that, by establishing ties with the Floyd County Department of Social Services, the David School has been able to make referrals as needed. The department has also served as a source of referrals to the David School.

Provide opportunities for teachers to collaborate and learn additional skills. According to the principal, teachers at alternative schools tend to burn out at a faster rate than do teachers at public schools. As such, the director and staff described the need to create an atmosphere designed to retain teachers over the longer term. One approach described by the director is to provide staff an opportunity to participate in—and determine the content of—professional development activities. Another approach is to provide staff regular opportunities to meet and reflect as a group. As discussed previously, David School staff meet on a weekly basis to discuss issues associated with the school—and with individual students. This time is also used to provide teachers an opportunity to discuss problems, exchange ideas, and vent about a student or particular situation. Other opportunities teachers have to feel part of the school are through the 1-week orientation prior to the beginning of school and through reflective thinking.

Use the program to address the educational and vocational needs of parents. The director emphasized the need to set up a structure that encourages parents to take advantages of the school's learning opportunities. The school's intake procedures require that parents become active partners in

their children's education by enhancing their own educational and vocational skills. In addition, the school sponsors adult learning classes and will provide parents opportunities to use its computer facilities.

Reflect and document what is being done. The director expressed the need of nonprofit organizations such as the David School to formally document any outcomes or data on the project. This will assist when trying to leverage additional resources. He recognized that "foundations want to see the outcomes and to know you will be accountable to the support they are providing. They want to ensure that you are doing what you promised when requesting funds."

I. Summary and Conclusions

The David School is a remarkable alternative for students who are not functioning in the traditional classroom environment. As stated by director of the David School, "This is not a school of choice but a school of need." The ARC grant helped to promote an approach that assisted students in focusing more on their long-term goals. While the Success Bound approach started as a pilot project in the school, it has been thoroughly integrated into the school. Students are now expected to articulate a plan for themselves once out of high school. According to the school's director, "Once a school for 'dropouts,' the David School has become a school of 'success.'" The school focuses heavily on vocational education and on providing students with skills that are transferable in numerous settings—i.e., work, vocational school, or college. Over the course of 5 years since the implementation of Success Bound, the school has focused on the role of parents at the school and in the lives of their children. Parents have become a more visible at the school and are expected to enroll in adult education courses if they have not received a diploma or GED. Between encouraging parents to increase their education and requiring students to focus on life beyond high school, the David School and Success Bound have proven to be a successful way to address the needs of Floyd County, Kentucky, and they have every intention of continuing to serve the most needy students in Appalachia.

Appendix A: *Student and Parent Intake Forms*

Date_____
Age_____
Social Security No.
_____

Student Intake Information

Student's Name _____ Date of Birth _____
Last First Middle

Address _____ City/State _____ Zip Code _____

Telephone No. (1) _____ (2) _____ (3) _____

Parent(s)/Guardian(s) _____

Do you have a driver's permit/license? _____ Automobile? _____ Insurance? _____

Have you ever been retained? _____

Last School Attended _____ Last Year Attended _____

Grade Level When Leaving School (Circle One) 8 9 10 11 12 Total Credits _____

List Types of Special Education and/or Remedial Classes (if any) _____

_____

List Types of Testing (if any) _____

How many days of school did you miss - last semester, last year? _____
Why? _____

Have you ever been consequented for negative behavior? If so, list those behaviors:

_____

Have you ever been consequented for alcohol, marijuana, or drug abuse (prescription/nonprescription)? _____
Explain: _____

_____

Have you ever been convicted of a misdemeanor/felony crime against a person/property?
_____ Explain: _____

_____

Any Suspensions? _____ If so, for what reason? _____

Any Expulsions? _____ If so, for what reason? _____

Student Intake Information (continued 2)

How did you hear about The David School? _____

_____

Why are you interested in our school? _____

_____

Who do you know who attends school here? _____

How important is school to you? _____

Why? _____

_____

What is your interest in reference to career, work, college, vocational school etc...

_____

_____

What do you consider as your best subject? Why? _____

_____

What do you consider is your least favorite subject? Why? _____

_____

What are some positive things you can tell me about your last school? _____

_____

What are some concerns you have about your last school? _____

_____

What are your expectations of a teacher? _____

_____

What are your expectations of yourself? _____

_____

What are your extra-curricular activities? Hobbies? Sports? _____

_____

What do you understand to be the expectation of a student at The David School? Explain:

_____

_____

Student Intake Information (continued 3)

Name of Parent/Guardian

Mother _____ Occupation _____

Education _____

Father _____ Occupation _____

Education _____

Family Income (Total) _____

Sources: _____ Wages _____ Child Support _____ KTAP

_____ Food Stamps _____ Social Security _____ SSI _____ Other

Names of brother and/or sisters:

_____ Age _____ Education _____

_____ Age _____ Education _____

_____ Age _____ Education _____

Number living in household _____

Impressions

Mother/Guardian: _____

_____

_____

_____

Father/Guardian: _____

_____

_____

_____

Potential Student: _____

_____

_____

_____

Other Information/Comments: _____

_____

_____

The David School
Parent Registration Form

1999-2000
David School, David, KY
41616

Name_____ Social Security_____

Address_____
Street City State Zip Code

Home _____ Work _____ Other_____

Birthdate_____ Age _____ Male_____ Female_____

Number of Years Out of_____ Highest Grade_____

Last School_____ Date _____

Race: White, not _____ Black, not _____ Asian/Pacific _____
American _____ Hispanic_____

Married _____Married_____Single_____Separated_____Divorced_____Widowed

Number of People Living in Your_____ Number of_____

Husband/Wife(s) _____

Highest Grade Your Mother_____ Highest Grade Your Father_____

Do you have other family members who would like information about our_____

_____
Name Address Phone

Who referred you to The David School? How did you hear about The David School?

___Courts/Judicial
___SDA
___Community Action Agency
___Community College
___College University
___Board of Education
___KET/GED on TV
___Media/Poster Brochure
___Technical Education
___One-Stop Center
___Family/Friend
___Other Public Agency (DES, DSI, DSS)
___Other: _____

Other Information About Yourself: (Mark all that apply)

___U.S. Citizen
___Veteran
___Disabled
___Immigrant
___Other Institutions
___Registered Voter
___Adult in Rural Area
___Correctional Facility
___Enrolled in College
Where? _____
___Enrolled in Voc-Tech School
Where? _____
___Homeless
___Migrant
___Employed Full-Time
Where? _____
How Long? _____
___Employed Part-Time (less than 30 hrs)
Where? _____
How Many Hours? _____
How Long? _____
___Unemployed and Seeking Employment
___Unemployed and Not Seeking Employment

Please list the names and ages of the children, age 18 or under you have legal responsibility for:

Child's Name	Age	School	SSN	Birthdate

Family Income	Receiving	GED	Have you ever attended an Adult Education
☐ Under $9,000 ☐ $10,000 – $19,999 ☐ $20,000 – $29,999 ☐ $30,000 – $39,999 ☐ Over $40,000	☐ TANF ☐ Disability ☐ Unemployment Insurance ☐ Public Assistance	Have you ever taken the GED test? ___Yes ___No When? _____ Where? _____ _____ Passed? ___Yes ___No	___Yes ___No When? _____ Where? _____ _____ Instructor: _____

The David School is not only committed to helping its youth, but also the parents of the youth. Please check below all the areas in which you feel The David School could help you.

- ◊ Earn a GED
- ◊ Earn Diploma from Alternative High School
- ◊ Earn Other Training (Post Secondary, Mayo, etc.)
- ◊ Enter the Military
- ◊ Get a Job
- ◊ Learn to Use Community Services and Resources
- ◊ Learn about Wellness/Health
- ◊ Learn Basic Skills for Employment
- ◊ Learn about Family Life Skills
- ◊ Participate in Activities at my Child's School
- ◊ Improve Skills to Help Child Succeed
- ◊ Learn to Participate in the Civic/Community Activities
- ◊ Take the GED Practice Test
- ◊ Improve my Ability to Read
- ◊ Improve My Ability to Spell
- ◊ Improve My Math Skills
- ◊ Prepare for a Career in _____
- ◊ Register to Vote
- ◊ Help Children with Their Homework
- ◊ Learn to use Banking Services
- ◊ Obtain a Library Card
- ◊ Obtain a Driver's License
- ◊ Receive U.S. Citizenship
- ◊ Learn English as a Second Language
- ◊ Be Removed from Public Assistance
- ◊ Obtain Job Advancement
- ◊ Job Retention
- ◊ Take a Test to gain Employment (CLD, etc.)

OTHER:
_____

BEST COPY AVAILABLE

Appendix B: Student Contract

STUDENT CONTRACT

I understand that it is a privilege to attend The David School, rather than a right. Further, I understand that if I am to benefit fully from what the teachers and staff offer me, I must fulfill certain responsibilities. Among These:

- I will become aware of the overall academic requirements and of the requirements of each class, and with the help of my teachers, I will strive to meet those requirements.

- I will respect the rights of others, including my teachers, fellow students, and anyone who works at the school or visits the school.

- I will attend classes every day. I realize that if I am not here, I cannot take advantage of what The David School offers. I understand that I will not be able to graduate if my attendance is less than 90 percent.

- I will come to school prepared to learn and I will do my very best while I'm here. I know that just being here physically is not enough; therefore, I will bring my brain to school with me every day, and it will be open and willing to learn.

- I will prepare myself to, be an independent person, able to set goals, make rational decisions and help myself to a productive future. Before I am graduated, I will explore my options and implement a plan to guide me after I leave here.

- I will have a positive attitude about myself, about the school, about learning, and about my classmates. I know that I can make the best use of my time in school only if I have a positive attitude. I also understand that only with a positive attitude can I relate well with my teachers and my fellow classmates.

- I will strive to become the best person I can be. In doing so;

    1. I will commit myself to being drug and alcohol free.
    2. I will not curse or use inappropriate language around my teachers or my classmates.
    3. I will not use any language, gesture or other sign that puts down other people.
    4. I will be respectful of other people even when I disagree with them.
    5. I will be courteous and polite in all my dealings with teachers and classmates.
    6. I will obey the rules on smoking, transportation, lunchroom and other areas of the school.
    7. I will keep myself physically clean and presentable.
    8. I will feed my body and my mind wisely and well.
    9. I will ask for help when I cannot solve a problem by myself.

Signature_____

Name (please print)_____

Date_____

Appendix C: *Post Secondary Education Plan*

THE DAVID HIGH SCHOOL
POST SECONDARY EDUCATION PLAN

NAME: _____

DATE OF GRADUATION: _____

LONG TERM JOB/CAREER GOAL:
Physician specializing in Pediatrics

EDUCATION NEEDED:
Bachelor's of Science
Major: Biology/Pre-Medicine

Prestonsburg Community College
Prestonsburg, KY
-and-
Thomas More College
Crestview Hills, KY

PREPARATION:
High School Diploma - received January 23, 1997
Applications – PCC application completed and enrolled
Thomas More College application completed and submitted
Financial Aid Application - completed and submitted
ACT Test – taken December 14, 1996

SHORT TERM JOB/CAREER GOAL:
Working at Hardee's Full-time
Looking for part-time or volunteer work in the medical field

PREPARATION:
Job Search
Resume – completed

I certify that outlined above is my Post Secondary Education Plan.

_____ _____
Student Principal

_____ _____
Date Date

Michelin Learning Centers

Project Location	Greenville, Anderson, and Spartanburg, South Carolina
Grant Recipient	State of SC Office of the Governor for the Michelin Tire Corporation
ARC Number	CO 10947J
ARC Project Type	Adult Literacy
Grant Amount	$250,000
Matching Funding	$85,551
Dates of Site Visit	April 18-19, 2000
Site Visitors	Brian Kleiner and Glenn Nyre

Project Abstract

Despite its growing prosperity, the Appalachian region of South Carolina has not yet outgrown some of the social ills that afflict poorer rural areas. One of these is under-education, including illiteracy and poor basic math and computer skills. From the perspective of many corporations, an undereducated workforce can potentially compromise the quality of products and overall profits. Thus, there appears to exist a growing interest among corporations in promoting the continuing education of workers.

The flattening of organization in manufacturing operations in evidence at Michelin requires a greater degree of responsibility, more flexibility, and a wider range of knowledge and skills on the part of workers. It also requires that they are literate, competent in math, and computer savvy. The ARC grant for the Michelin Learning Centers project was an initiative aimed at improving the basic reading, writing, math, and computer skills of employees within the Michelin Tire Corporation. Under the period of the ARC grant, the approach of this initiative involved the installment of three learning centers, the crafting and use of an assessment instrument for all current and new employees, and the design of a curriculum for use in the learning centers for the remediation of skills, as well as for job training and other kinds of continuing education.

BEST COPY AVAILABLE

Michelin Learning Centers

State of SC Office of the Governor for the Michelin Tire Corporation

A. Background

Community Characteristics

The Appalachian region of South Carolina is in the midst of a significant economic boon, as informally evidenced by extensive business and housing construction and road improvements. Unlike many more depressed Appalachian regions, new industries continue to move to the area because of a business-friendly tax structure. In South Carolina as a whole, more than 300,000 jobs have been created in the last 7 years, and unemployment is currently at a low 4 percent. Greenville is one of the largest cities in the northwest area of the state, and within it and the surrounding area are a variety of large corporations. They include, most notably, the Michelin Tire Corporation and BMW's first full U.S. manufacturing facility. According to a recent survey conducted by the Greenville Chamber of Commerce, diverse industries are relocating to the area at a rapid pace. Service industries are growing the fastest, with about 21 percent of new opportunities coming from this sector. Manufacturing and government positions follow closely, with approximately 19 percent and 18 percent, respectively.

Characteristics of the Grant Recipient Organization

The grant recipient for the Michelin Learning Centers project was the Division of Education within the South Carolina Office of the Governor. This office was charged with overseeing activities within the project and allocating ARC funds to Michelin Tire Company to initiate adult learning centers at its plants in the towns of Greenville, Spartanburg, and Anderson. Although the state controlled the grant money and set some guidelines for the planning and implementation of the project, Michelin took most of the responsibility for the project's design and implementation during the period of the ARC grant.

The Michelin Corporation, founded in France in 1889, now employs over 120,000 people worldwide and has a business presence in 170 countries. Michelin has 14 plants in North America, half of which are located in South Carolina.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

Despite its growing prosperity, this Appalachian region of South Carolina has not yet outgrown some of the social ills that afflict poorer rural areas. One of these is a high level of illiteracy. Twenty-five percent of the adult population in South Carolina is at the lowest level of literacy (Level 1 – "significant literacy needs"). Across the 46 counties in the state with populations of at least 5,000, Level 1 literacy ranges from 15 percent to 46 percent. Greenville County's Level 1 literacy rate is 20 percent, although the rate in the city of Greenville itself is 28 percent.

While concerns over levels of adult literacy are not new, the nature of these concerns has changed significantly in light of the stringent demands of the workplace in the information age. In fact, one of the National Education Goals states that "Every adult American will be literate and will possess the knowledge and skills necessary to compete in a global economy and exercise the rights and responsibilities of citizenship." This is a recognition that many of those who need to improve their literacy skills are not in schooling situations.

From the perspective of many corporations, an undereducated workforce can potentially compromise the quality of products and overall profits. Thus, there is a growing interest among corporations in promoting the continuing education of workers. This is especially true at Michelin Tire Corporation, which has in recent years changed its means of operation on production floors within its plants. Unlike traditional factory practices, wherein production workers are trained in a small number of highly specialized skills, current Michelin practice involves an expansion and diversification of the skills of its workers. Manufacturing operations now consist of "cells" or "teams" of 6 to 10 employees who are cross-trained on each aspect of the cell.

One site visit interviewee explained this concept by using the metaphor of a wheel, where the spokes represent team members responsible for the various domains that feature in the work and goals of that team, such as maintenance, quality, safety, production, cost, and human resources. Each team member is primarily responsible for one domain, but is trained in all of them. As a result, much decision making is delegated into the hands of production floor workers, allowing a "business unit leader" to be responsible for as many as 60 people across three teams, each with a supervisor, because less input, guidance, and decision making are needed from management.

This flattening of organization in manufacturing operations requires a greater degree of responsibility, more flexibility, and a wider range of knowledge and skills on the part of workers. It also requires that they are literate, competent in math, and computer savvy. At the time of the ARC grant, Michelin had determined that much of its workforce required remediation in basic skills such as reading writing and math, and was computer illiterate.

Approach

The ARC grant for the Michelin Learning Centers project was an initiative aimed at improving the basic reading, writing, math, and computer skills of employees within the Michelin Tire Corporation. The original goals of the project were to:

- Establish learning centers in each of the three Michelin facilities in the Appalachian region;
- Design an assessment instrument set within a job-relevant context;
- Implement the learning centers, providing learners with both traditional and electronic education media in an educational setting; and
- Develop and enact a plan for informing employees about educational requirements and opportunities.

Michelin's promotion of the continuing education of its employees is evidenced in the following statement published in its final report on the ARC-funded Michelin Learning Centers project:

> The Michelin Lifelong Learning Centers are part of our vision to continue to provide for the full development of the capabilities of our employees. We are striving to become a Learning Organization characterized by an environment within which individual employees are given opportunities to grow and develop in their knowledge and skills. We view this as part of the lifelong learning process.

This commitment was also reflected in the company's provision of resources, staff, and upper-management support for the learning centers initiative. Under the period of the ARC grant, the approach of this initiative involved the installment of three learning centers, the crafting and use of an assessment instrument for all current and new employees, and the design of a curriculum for use in the learning centers for the remediation of skills, as well as for job-training and other kinds of continuing education.

Status at the Time of the Site Visit

At the time of the site visit, the activities initiated under the ARC grant were still active, with significant modifications and expansions. Now a part of Michelin's operating budget, with some instructional support provided by the county's adult education program, the three learning centers continue to take in new learners. However, the purposes of their visits are different in that unlike the period under the ARC grant, there is currently very little need for remediation. As detailed later, the number of basic-skills-deficient employees has been reduced to almost none. In addition, new employees must not only have either a high school diploma or a general equivalency diploma (GED), but also must take a 4-hour screening test. The current and projected future focus of the Michelin Learning Centers is the use of these sophisticated educational resources for the training of employees in a wide range of job-related skills.

C. Activities Undertaken as Part of the ARC Project

The activities undertaken for the project involved the coordinated effort of a team consisting of the ARC grant manager, the corporate production training manager, three Michelin facility training managers, three learning center coordinators, three workforce specialists, three learning center instructors, one adult education director, and one adult education teacher. Players on this team arrived during different phases and were responsible for different facets of the project. Meetings were held monthly during the formative phase, and efforts were reportedly highly collaborative.

Establish Learning Centers

Before the advent of the Michelin Learning Centers, besides individual and sporadic cases of tutoring in adult basic education, there was little done (aside from on-the-job-training) to promote the continuing education of Michelin employees. Moreover, even if in 1992 there were a systematic effort on the part of Michelin to encourage or require the continuing education of its employees, there existed no onsite central locations to house such endeavors. For this reason, the first objective of the Michelin Learning Centers project was to install learning centers on site at three of its plants in Appalachian South Carolina.

Three learning centers were established at each of its Appalachian facilities -- one at US1, Michelin's Greenville plant; another at US2, in Anderson; and another at US3, in Spartanburg. An important aim of the project was to provide learners with an attractive and comfortable environment conducive to learning. As described in the final report on the project, "Every effort is made to remove the pressures of the manufacturing environment from the learner's mind while in the learning center." In addition, it was decided that the learning centers should be highly accessible and within easy walking distance of the production floor. It was also noted, on the other hand, that centers should not be too close to the production floor, because learners should be made to feel that their participation is private and confidential. These conflicting pressures argue for a center location that is accessible and inviting, but not too close to operations.

For the most part, the original learning center spaces installed during the ARC grant met these conditions (although the one at US1 was in recent years moved out of the administration building to be closer to the production floor, and the one at US3 moved away from the floor to the administration building). Each of the learning centers was furnished with computers, small libraries, and comfortable, divided workspaces. Each computer was fitted with appropriate software purchased with ARC funds once the basic curriculum had been developed.

Design and Implement an Assessment Instrument

The second objective of the Michelin Learning Centers project was to design and implement an assessment instrument with the ultimate aim of ensuring that all hourly employees had a level of basic skills adequate for their job performance. The end result of this process was the crafting and use of an assessment instrument known as the Workplace Skills Inventory (WSI).

In the design phase of the project, a review was carried out of standard tests of generic basic skills for adults, such as the Test of Adult Basic Education (TABE). However, since one aim of the project was to employ a "functional context approach" to learning (i.e., setting the instrument within a job-relevant context), it was decided that a company-specific assessment instrument would be preferable, since it would reflect the workplace skills in which the company was most interested. This was accomplished through a review of research on workplace testing, close observation of production areas, and interviews with workers in each plant regarding operations, tasks, and special jargon used within their work areas. In addition, printed materials, such as time cards, were analyzed for required reading levels.

With these data in hand, the next step in devising the WSI involved writing tasks for inclusion in the instrument that simulated job activities and at the same time tested relevant basic reading and math skills. The draft of the assessment instrument was reviewed by project staff and by four adult education directors, several workforce specialists, and an adult education professor at the University of South Carolina. After consequent revisions, the project team included 12 tasks that formed the basis for the WSI.

The WSI was then evaluated by testing it on applicants, rather than current employees. It was determined that despite the instrument's job-related content, applicants with strong basic skills and no knowledge of tire building could be successful. Thus, the project team concluded that the WSI should be considered a valid test of basic skills, and not a test of job knowledge.

Using the WSI, assessment was carried out at the three Michelin plants. Testing was originally planned to be the first step in the process of recertification of production workers who were evaluated every 2 years. However, to expedite this process and make way for further training programs, the testing schedule was accelerated for some workers. It should be noted that Michelin tried to avoid treating the WSI as a "test," fearing that this would send the wrong message to workers who might feel as if their jobs could potentially be threatened if they "failed." In addition, the site visit liaison (who served as the Greenville learning center coordinator and the main Michelin contact with ARC) explained that the WSI is not a "scientific" instrument, meaning that it should simply serve as a rough measure of basic skills and as an indicator of areas for improvement – basically, a diagnostic instrument.

As a result of company-wide testing, approximately 40 percent of production workers required some form of remediation. As of June 1993, 1,759 employees were assessed (1,006 in Greenville, 481 in Anderson, and 272 in Spartanburg), with 741 enrolled in the learning centers. The cutoff point for the WSI was a correct response rate within the range of 87-95 percent, with 87-91 being marginal. The tests of individuals who did not reach a score of 95 were reviewed to identify specific basic skills that needed improvement. Those workers requiring some form of remediation were informed that they should attend the learning centers' programs.

Develop and Deliver the Curriculum

The curriculum for remediation developed within the learning centers involved an instructional module addressing each task on the WSI, so that individual results could be reviewed by instructors for

areas needing improvement. In many cases, all that was required was a short coaching session on those parts of the WSI that indicated areas in which improvement was needed. Although the project team researched existing adult-oriented basic skills software systems, they determined that no one system would be able to adequately meet the needs of all learners. They therefore decided that the learning centers should include an array of customized resources, such as selected basic skills computer software, books, workbooks, cassettes, and videos. Efforts were made to integrate job-related materials into the curriculum.

A "prescription sheet" was developed for instructors that matched skill weaknesses with appropriate lessons and a variety of resources to assist in remediation. For example, if an individual was found to need work on "using table of contents, index, appendix, glossary, systems or subsystems," he or she might be instructed to refer to the following resources, including a job-related workbook, a book chapter, and lessons from a computer software program:

- Michelin Manual Sections Exercise
- *Document Skills for Life and Work*, pp. 22-23
- *Activity -- Lessons 5 and 6, Sect.1

The final report on the project noted which features were considered important in selecting learning center software:

- Appeal to adults through its visuals and its approach to the lessons.
- Have simple log-on and exit procedures.
- Teach the skills we identified through literacy task analysis.
- Be applicable for those who want to upgrade their skills to meet personal goals.
- Use up-to-date computer technology (CD-ROM, laser disk/interactive video).
- Provide training for learning center staff and teachers.
- Have a data management file.
- Have a toll-free telephone line for assistance.

The software selected for the learning centers included "The Ready Course: Reading to Educate and Develop Yourself," "Modumath," "Skills Bank," "GED 2000," "I Want to Read," and "French in Action."

The learning centers were staffed by instructors who were not Michelin Employees. Current instructors told the site visitors that staffing learning centers with non-Michelin personnel is important, because it allows workers to gain confidence in their teachers without fearing any negative repercussions from slow or poor learning. One explained that, "Because I'm not a company employee, they know it's confidential, they can vent..."

The current instructors provided a set of characteristics necessary for a good learning center instructor. Most importantly, they said an instructor must be a "people person," i.e., someone who can interact with people at all levels, put learners at ease, gain their trust, reassure them, and so on. Instructors should also have a positive attitude, an education training background, and good computer skills. He or she should be flexible, organized, and adaptable. One current instructor explained that the position requires the wearing of many hats at once: "I've learned to be the most flexible person I've ever met. I've been a marketing person, a teacher, and a coordinator."

Develop a Communication Plan

The final objective of the Michelin Learning Centers project was to develop and implement a communication plan to inform employees about the learning centers, the WSI, and the basic skills improvement program. This aspect of the plan was critical not just in informing employees, but also in enlisting the support of Michelin employees at all levels. At meetings that included supervisors, training facilitators, plant managers, and the ARC grant manager, a communications package was distributed to supervisors responsible for presenting information regarding the plan to employees in their charge. These meetings included statements by plant managers aimed at convincing all in attendance of the importance of continuing education and facilitating the development and maintenance of a competent, literate workforce. Furthermore, supervisors took the WSI themselves in order to provide them with a better understanding of the instrument.

The communications package included the following:

- Overhead transparencies of key points in the company's Employee Development Model, Manufacturing Certification Program, and new post-certification standards.
- Lifelong Learning Center brochures listing types of classes, software, and equipment in the learning centers, as well as information on hours of operation and the names and phone numbers of learning center coordinators and instructors.

- A short video featuring comments by the CEO of Michelin North American, a message from plant managers, and a "movie tour" of the learning centers.
- A list of questions and answers about the learning center and details about participation.
- A personal letter from the plant manager encouraging participation.

Additional efforts were made to spur interest in the learning centers, such as open houses with refreshments and the offering of door prizes. Open house visitors were able to sit at computers to test the software, look through the libraries, and register for prizes such as fishing rods, radios, and calculators.

D. Problems Encountered

Problems reportedly faced during the timeframe of the ARC grant mainly involved lapses in communication among participating parties, some delays in program implementation and produce design, and resistance to change on the part of Michelin employees. None of these problems seriously compromised the aims of the project.

Communication and Buy-in

It is to be expected that profound changes in corporate policy will lead to some resistance to change from within. There were two fronts of resistance to the Michelin Learning Centers project, one from the ranks of the production workers and one from management. After learning of the new company policy regarding basic skills testing, many of the production workers reportedly expressed concern and apprehension. Many feared for their jobs, and efforts were taken to reassure workers that although they would need to demonstrate sufficient basic skills in reading, math, and computer usage, they would be fully and patiently supported in the process. In fact, this promise appears to have been respected, as evidenced by the few remaining workers still yet to pass the WSI, in some cases even after several years of continuing efforts.

Some workers were reluctant to visit the learning centers, reportedly fearing the stigma and embarrassment attached to remediation. Further, many workers view voluntary continuing education as unnecessary and burdensome. Indeed, over the lifespan of the Michelin Learning Centers, there have been relatively small numbers of "volunteer" learners. Although it was explained that during the ARC

grant period, individuals came to the learning centers for such things as to prepare for their GED, to practice on a computer, to learn typing, or to borrow a book, the majority of those who attended the centers came because their jobs required it. This is to be expected, given that there were few incentives for volunteer participation and workers put in long hours and had other personal responsibilities. However, there were a few instances reported of employee's spouses taking advantage of the centers, which is encouraged, and some parents have come to the centers in order to brush up on certain skills to help their children in mathematics classes and have even brought their children for homework assistance.

Resistance to the learning centers also came from above, with some in management not buying in to the initiative. While the learning centers were implemented fully, two of the plants were not involved in project planning, and this exclusion might have hardened their resistance. According to the final report:

> Too much had been decided by corporate and the early members of the Project Team before the local plants were informed. When their input was sought, it was to determine how they were going to implement our plan. We believe that this lack of input has had a major effect upon the level of involvement we have gotten from some plant management.

Another problem was that the project team was not able to adequately coordinate with and communicate information about the project with newer members of the team and other Michelin departments, with the result being that collaboration was at times strained. For example, the final report notes that months of effort went into researching motion software to run different laser disk programs. It was then discovered that experts within Michelin's Information Services Department had known what item was needed from the start: "Hours of time [could have been saved] and lots of grief could have been avoided had we known about and used this resource that was available to us."

Budget Constraints

Several problems relating to cost were encountered. First, an insufficient amount of cost research led to the late realization that the intended software was more expensive than anticipated. It was decided that rather than furnishing each learning center with complete adult education software systems, a more selective process was necessary. Second, budget constraints limited the kinds of hardware that could be purchased by the project.

E. Evaluation and Dissemination

Evaluation

There was no outside evaluation of the Michelin Learning Centers project. However, an internal evaluation was conducted using the CIPP model (Context-Input-Process-Product), employing interviews, document analysis, observation, and test data. The evaluation focused on whether the project's purpose was agreed on by all parties (context), whether resources were adequate (input), whether procedures were sufficient for accomplishing project goals (process), and whether the projects goals were achieved (product). Evaluation was carried out during the formation of the project, as well as after the ARC grant period ended, by learning center coordinators, corporate training staff, and workforce specialists on the project team.

Dissemination

The site visit liaison noted that the Michelin Learning Centers project garnered considerable interest from other companies and organizations. For instance, representatives from companies such as Dupont and Milliken have visited Michelin in order to learn about the development of the learning centers. In addition, presentations about the Michelin project were made to Continuing Education Deans at Greenville Technical College and Tri-County Technical College, both of whom have become partners in some of the more advanced technical training for employees.

F. Sustainability and Project Expansion

Sustainability

All three of the Michelin Learning Centers are continuing to operate some 7 years after the ARC grant, and are fully funded and maintained by Michelin. This support reflects the company's recognition that a better educated workforce benefits the company as well as its employees. The site visit liaison noted that, "People make those tires, and we want the best workforce possible." In addition, the company appreciates the potential value of the learning centers as facilities for all kinds of computer-based job training. Indeed, the main purpose of the learning centers has transformed from remediation of basic

skills to training. It was explained that the learning centers are currently viewed as "a normal part of doing business."

Project Expansion

Although the learning centers are still active, their purposes and methods have changed considerably since the period of the ARC grant. Nonetheless, the original ARC-funded learning centers provided the impetus for the recognition that the educational resources available in the centers could be used for many kinds of job training. The shift from remediation to training has resulted in a modified curriculum and a broad set of resources within the learning centers. Learning center participation is currently fairly robust at the three plants, but this is especially true at the US1 facility. For example, during 1999, the US1 learning center had 662 users with 11,505 hours. From January to March of 2000, it has already seen 289 users with over 4,300 hours.

The WSI has been phased out, since the vast majority of the Michelin workforce has successfully passed it and a new test has been developed for new hires. It was explained that only 15 production workers at US1, and only 5 at US3, have yet to pass the WSI test. These remaining individuals are being provided with individual tutoring. For example, the US1 learning center invites volunteer tutors from the Greenville Literacy Association to work one to one with workers still needing remediation. It should be noted that no Michelin employee has ever been fired for failure to pass the WSI.

The expansion of the learning centers has involved the replacement of the original ARC-funded computers, as well as the addition of software and other educational resources. The computers operated within the learning centers are now leased. The US1 learning center currently leases 11 computers, 5 of which are networked. US2 currently has 8 computers, and US3 has 6. Exactly half of the computers at these learning centers are networked. Networking allows for training software that is available across learning center facilities on the company's intranet system. While US1 has by far the most software, all of the sites have increased their inventory of software over the years.

Two of the three learning centers are currently staffed by instructors who are non-Michelin employees. These instructors are paid in part as contract workers by Michelin and in part by local county adult education providers. They serve mainly as facilitators within the learning centers, leading learners to resources, advising on computer use, maintaining the centers' operations, marketing the learning center services to all levels of employees, and keeping close contact with supervisors to identify new learning

needs. The US3 learning center is no longer staffed by an instructor, since the majority of work done there is training that requires little instruction. The learning center coordinator at US3 is available as a resource, however, if problems arise.

As noted earlier, the new focus of the Michelin learning centers is on job training. This allows individuals to self-train on their own schedules and avoids the difficulties of scheduling and coordinating training classes. In addition, the learning centers provide an environment away from the production floor that is conducive to learning. Examples of training include ISIS training (basic competence in a variety of software programs, including Excel, NT, Netscape, Microsoft Word, Security, and ccMail), training for level tests that employees must pass for promotions (e.g., algebra, trigonometry), operator maintenance training, fork lift training, and so on. Much of the training software that is applicable across plants is loaded on Michelin's intranet.

Instructors noted that some resistance from workers and management to the learning centers continues. For instance, many workers are still leery of computers, and few employees visit the learning centers unless it is necessary for their jobs. One instructor noted that, "If you don't have something they think they need, they're not going to come," adding that some supervisors are less than tolerant about workers who spend too much time in the learning centers, and that workers who sense this might be apprehensive about attending. As one instructor said, "When a supervisor asks 'When are you going to be done up there?' rather than 'How is it going and what are you learning?' a whole different set of messages are being sent. We are trying to encourage the latter." Volunteer participation might also be rare because few incentives are offered and relatively little is done by management to promote voluntary continuing education.

In addition, some of the technology-fearing old guard within upper management resists movement toward making all training available on desktops, insisting instead that training continue to be held in more traditional settings, such as the classroom or on the production floor. Persuading upper management of the benefits of desktop training is an important current goal among learning center advocates at Michelin.

Future plans include making Michelin training software available on the Internet so that employees may train and learn at home. Moreover, with respect to the physical learning centers themselves, Michelin appears to be committed to introducing "new ways of continuing to learn in that

environment." As one company trainer said, "Even the office employees need to get away from the noise and interruptions of their cubicles in order to concentrate in a learning environment."

G. Accomplishments/Outcomes

Overall, Michelin employees are better skilled in reading, writing, basic math, and computers than they were prior to the learning centers. This is evidenced by the few remaining workers still requiring remediation in basic skills at the three plants. Further, the Michelin Learning Centers project satisfied its principal objectives during the period of the ARC grant. With respect to the first objective, learning centers were installed in three of Michelin's Appalachian facilities. The centers were conveniently located and provided comfortable and inviting spaces for learners. As for the second objective, a job-related assessment instrument was successfully designed and implemented across the three Michelin Appalachian plants. The instrument proved to be an adequate measure of employee basic skill deficits and gaps.

The third objective of the project was to operate the learning centers. By June of 1993, 1,759 production workers had been assessed, and of these, 741 had enrolled in a learning center. Further, a small number of employees voluntarily attended a learning center for a variety of purposes, such as GED preparation, practice on computers, and improving typing skills. Given the current very low numbers of workers still requiring remediation, the curriculum implemented in the learning centers appears to have adequately addressed the basic skill weaknesses of participants.

Finally, with respect to the project's fourth objective, a communication plan was developed and carried out with a moderate degree of success. This plan was well devised and orchestrated, and it provided a solid foundation for worker participation, as production workers were successfully informed about assessment requirements. However, it should be noted that while workers were well informed about the centers and assessment requirements, more might have been done to encourage voluntary participation in continuing education activities. Nonetheless, given the project's primary aim of assessment and remediation, the communication plan did adequately address this goal.

In the years following ARC-funding, the learning centers have been sustained, expanded, and modified. With the move away from remediation to the current emphasis on training, the learning centers continue to serve significant numbers of learners. Still, relatively few workers attend a center for the

purpose of voluntary continuing education. Perhaps this is to be expected, given long work hours and the pressures of daily life on production workers.

H. Lessons Learned by the Project and Recommendations for Other Communities

The Michelin Learning Centers project was a fairly innovative one, especially in the early 1990s when it was funded by ARC, and much was learned in the process of its design and implementation. Many of the lessons learned, including those noted by project team members, as well as those resulting from the site visit and subsequent analysis, are detailed below.

Planning, organization, and communication is critical. Ample time should be allotted for planning the project. The planning period should allow the project manager to become familiar with company operations and project team members. It should also be used to research assessment and curriculum issues, as well as to identify the most appropriate kinds of hardware and software that are affordable. In addition to good planning, a project should be well organized, with open lines of communication among project team members. Strong organization and collaboration requires a clear delegation of responsibilities. It also requires the clear communication of information regarding the project to new team members.

A successful project requires certain qualities and qualifications of participating parties. First, company upper management must have a positive view of and display commitment to the learning centers. Site visit respondents emphasized that upper management must set the tone in support of continuing education and that without such commitment, learning centers cannot be sustained.

The qualities and qualifications of learning center instructors are of vital importance to a project's success. These individuals must be technically oriented, organized, flexible, adaptable, and able to relate to people at various levels within the company. Further, instructors should have a background in education, training, and computers. It is preferable that instructors not be company employees, since this helps in gaining the trust of learners.

Learning center coordinators should be people who believe in what they're doing, are able to interface with plant managers, and are able to run an "internal business" that exists to support the operating units of the company and must market its services to the employees. They should also have

experience in training or other human resources functions, be well respected within their facilities, and have a good knowledge of the company.

Give thoughtful consideration to center location, space, and curriculum. Learning centers should be strategically located. That is, they should be easy to access, away from administrative offices, and close to the production floor. On the other hand, centers should not be too close to the production floor, so that the privacy of the learners is respected. In addition, centers should be inviting, comfortable environments for learning.

As for curriculum, there should be a thoughtful selection of software after determining the needs of the population. The curriculum should be flexible enough to accommodate the varying learning styles of adults. A contextual learning approach should be employed to the extent feasible (given constraints of cost), since learners should be able to readily see the relevance of their learning to their work.

I. Summary and Conclusions

The Michelin Learning Centers project highlights a significant avenue for adult basic skills education within the workplace. Given recent changes in manufacturing operations and the need for a more highly skilled workforce, learning centers provide a convenient source of education that can benefit both workers and their companies. This is especially true for companies in regions with high rates of illiteracy and poor basic math and computer skills among the workforce population. As Michelin and other companies are discovering, in addition to supplying the tools for remediation, learning centers may also provide a rich resource for computer-based job training.

Mobile Technology Project

Project Location	Hiawassee, Georgia
Grant Recipient	Towns County Middle School
ARC Number	GA-12935-RI-302
ARC Project Type	Dropout Prevention
Grant Amount	$320,000
Matching Funding	$80,000
Dates of Site Visit	February 28, 2000
Site Visitors	Gary Silverstein and Laurie Somers

Project Abstract

The Mobile Technology Project was designed to provide every student in the Towns County (Georgia) Middle School with a laptop computer (teachers were provided with both a laptop computer and printer). To take full advantage of the computers, the project was also used to incorporate and transform curriculum materials and worksheets for all middle school classes, including language arts, reading, social studies, science, and mathematics, into a laptop environment. The vendor was responsible for (1) supplying the laptop computers, (2) providing training in the use of the laptop computers to teachers, students, and parents, (3) providing ongoing support for maintaining the laptop computers, and (4) providing teachers with information about online resources that were aligned to Georgia's curriculum.

The project has achieved all of the implementation targets and outcomes that were delineated in the original proposal to the Appalachian Regional Commission. The provision of laptops to all middle school students—coupled with extensive professional development and online curriculum resources—has provided teachers an opportunity to modernize their instructional practices. The project has also provided all students equal access to the Internet and other emerging technologies. Our interviews with administrators, teachers, and students, as well as our limited observations of classroom practices suggest that teachers and students are making good use of their new opportunities.

BEST COPY AVAILABLE

Mobile Technology Project

Towns County Middle School

A. Background

Community Characteristics

The Mobile Technology Project was conducted by the Towns County Middle School in the city of Hiawassee, Georgia (population 693). The school serves Towns County, an isolated region in northern Georgia that borders Tennessee. According to U.S. Census data:

- Of the 8,529 residents residents in Towns County, 99.7 percent are white (1998 Census).
- Approximately 9.2 percent of county residents are between the ages of 5 to 14 years, and approximately 24.3 percent are over the age of 65 (1998 Census).
- Of the county's population age 25 and over, 31.7 percent are high school graduates, while 26.4 percent are college graduates (1990 Census).
- Overall, 12.9 percent of the county's residents live in poverty, as do 18.9 percent of the county's youth age 18 and younger (1996 Census).[1]
- The median household income in Towns County is $27,324 (1996 U.S. Census estimates).[2]

Characteristics of the Grant Recipient Organization

Towns County Middle School was the grant recipient for—and primary beneficiary of—the Mobile Technology Project. As grant recipient, the middle school was responsible for all aspects of project implementation including identifying and working with a vendor (NetSchools) to equip middle school teachers and students with laptop computers.

The middle school is part of the Towns County Comprehensive School complex. This building, which also houses the county's preschool and kindergarten programs, elementary school, and high school, serves a total of 940 students. Towns County Middle School covers grades 6 to 8, and has 9 teachers and

---

[1] Tourism is the most prominent industry (Towns County is situated in a mountainous region that includes numerous lakes and two conference centers), while the school and hospital are the two largest employers in Hiawassee. In addition, many residents work outside the county.

260 students. According to the school's original application to the Appalachian Regional Commission (ARC), over 40 percent of the students receive free or reduced-priced breakfast and lunch. In addition, between 1991 and 1995, an average of 4.4 percent of the county's students in grades 8 to 12 dropped out of school (Georgia Department of Community Affairs, October 1996).

B. Project Overview

Problems/Disparities the Project Was Designed to Address

The project was used to provide laptops and 24-hour Internet access to all middle school teachers and students. The purpose was to help middle school students overcome some of the barriers associated with living in an isolated region—including a widespread lack of home access to learning technologies. (Prior to the project, only 25 percent of students had access to a computer at home, and even fewer had home access to the Internet.) The project was also designed to ensure that the school's graduates would be prepared to use technology in academic and professional settings, reduce the school's drop-out rate, encourage the parents of middle school students to utilize local adult literacy programs, and increase the number of Towns County adults who attain GEDs. These last two expectations were especially important to the middle school's principal, who was quoted in the *Atlanta Journal* (November 28, 1998) as stating:

> It is an awesome task to overcome a historical inertia of this magnitude, in that high school dropouts tend to beget high school dropouts. In an attempt to combat this vicious cycle of illiteracy, it is imperative to introduce a program in which students and their parents are able to participate.

At the time of the application for ARC funding (December 1997), the school's administrators had already taken steps to enhance teachers' and students' access to learning technologies. Specifically, (1) a computer had been installed in each elementary classroom, (2) computers had been obtained for a middle school lab, (3) computers had been installed in all high school mathematics and English classrooms, (4) a new technology lab had been added to the high school vocational department, and (5) wiring closets had been installed in each wing of the school, enabling Internet connections in all of the school's classrooms. In spite of these enhancements, the school's principal indicated that the low ratio of computers to students hindered teachers' and students' use of learning technologies the classroom. Most of the middle school classrooms were equipped with only two or three computers, and the lack of computers in homes prevented teachers from assigning Internet-related research projects and homework assignments.

The school's principal indicated that the idea for the project originated with his suggestion that the school's teachers be equipped with a laptop computer for increased access to the Internet for lesson planning. The overwhelming response from teachers was that they placed a higher priority on providing laptop computers to all of their students. In so doing, they stressed the need for all students, regardless of their future plans, to be computer literate. (The proposal to ARC noted that "Today, computers are found in retail stores, hotels and motels, fast food restaurants, health care facilities, convenience stores, and a variety of other work places which may attract students after high school.")

Approach

The Mobile Technology Project was designed to overcome these barriers by providing every middle school student with a laptop computer and all teachers with both a laptop and a printer. To take full advantage of the computers, the project was also used to incorporate and transform curriculum materials and worksheets for all middle school classes, including language arts, reading, social science, science, and mathematics, into a laptop environment. The vendor, NetSchools, was responsible for (1) supplying the laptop computers, (2) providing training in the use of the laptop computers to teachers, students, and parents, (3) providing ongoing support for maintaining the laptop computers, and (4) providing teachers with information about online resources that were aligned to Georgia's statewide curriculum for middle schools.[3] The proposal to the ARC delineated a series of project goals and intended outcomes, including:

- Provide a laptop computer for every middle school student and teacher.
- Provide a workshop for all middle school students and their parents in the use of the laptop computers.
- Provide students with Internet access at school and at home.
- Provide free Internet setup and training for all students and their parents.
- Incorporate computer technology in all middle school classes.
- Automatically list homework assignments in an organized fashion at the end of each day.
- Maintain a school dropout rate that is equal to or less than the national average.
- Provide parents of middle school students with access to adult literacy programs.

[3] At the time of the site visit, the vendor was providing similar services to approximately 20 other schools nationwide.

- Generate a 25 percent increase in the number of adults earning GEDs through online classes and weekly consultation with the Towns County Adult Education instructor.
- Provide teachers with adequate technology and inservice staff development to enhance their lesson planning, assessment of students' progress, and capacity to conduct research and writing.
- Provide the technology necessary for the preparation of student products that are typed and neat in a format conducive to universally accepted criteria.
- Enable students to produce and maintain a school web site designed to enhance computer literacy and provide school information.
- Enable students to communicate with other students throughout the nation and the world.
- Enable students to produce articles for the school newspaper and the local area newspapers.
- Enable students to create a retail store that sells a variety of items including student-created and hand-crafted products.

Status at the Time of the Site Visit

At the time of the site visit, all of the school's 6th to 8th grade teachers and students had been assigned their own laptop computers, and the computers had become a permanent fixture in the middle school's classrooms[4] As more fully discussed later, all of the middle school teachers that we interviewed were routinely using the laptop computers with their students in the classroom and exploring online resources that were aligned with Georgia's middle school curriculum. In addition, the school had requested—and received—an additional $46,200 from the ARC to underwrite the cost of purchasing 30 additional laptop computers (the middle school indicated in its application to the ARC that it had underestimated the number of computers that would be needed for the 1998-99 school year), and extending the warranties for all computers.

To assure that project gains were not lost when 8th graders moved on to high school, all of the 9th grade students who had participated in the Mobile Technology Project in the previous year had been provided a more advanced laptop computer, which they will keep until they graduate from high school. The principal also indicated that the plans were underway to assess the feasibility of eventually providing laptop computers to all 5th grade students.

[4] Consequently, the middle school computer lab installed prior to the Mobile Technology Project was transferred to the elementary school.

C. Activities Undertaken As Part of the ARC Project

During the site visit, we interviewed the middle school's principal, most of the teachers, and a small sample of middle school students to gain a better understanding of the factors that were critical to the success of the Mobile Technology Project. This section provides an overview of these key factors and issues, including the project's technology; the training that was provided to teachers, parents, and students; steps taken to build support for the project within the community; and steps taken to integrate the use of technology into the classroom.

Technology

The equipment and technical assistance used to support the Mobile Technology Project were unique in several respects. The laptop computers were designed specifically for young students. The blue and gray laptops—compact enough to fit in a backpack—are housed in a sturdy plastic and titanium case. All of the connections (e.g., for an external phone line) are enclosed with a rubber seal to repel moisture. (In a November 28, 1998 article in the *Atlanta Journal,* a Towns County Middle School teacher indicated that "You could spill a Coca-Cola on it (the vendor's laptop) and it would rinse off." To demonstrate the computer's durability, the principal pulled out his laptop during an interview and slammed it down on his desk.) The laptops do not accept diskettes or CD-ROMs—thereby making it more difficult for kids to add games and other noneducational materials (students can borrow an external disk drive.) The cost per laptop was $1,600.[3]

Students' laptops are connected to the school's computer network through use of an infrared wireless connection—i.e., Ceiling Access Points (CAPs)—that automatically connect students to a central server when their laptops are activated. All middle school classrooms are equipped with ceiling access points. Although a CAP's range is limited to a single room, this use of infrared technology does enable teachers to configure their classrooms without having to worry about extraneous cables that may violate fire codes or the physical placement of the laptops. The CAP system provides for a quick and easy way to exchange information between students and their teachers. For example, students' work can be transferred electronically from their laptops to individualized electronic folders on the school's central server. In addition, at the end of class, teachers can transmit homework assignments directly to each student's laptop.

The system installed on the laptop has several other features worth noting. First, when classroom assignments are completed, the system automatically scores the work and provides immediate feedback, including the correct answer, to the student. The system also provides teachers with an instant tally—for individual students and the entire class—of which items (or topics) were answered correctly and incorrectly. According to the teachers we interviewed, this tool saves time since they do not have to inspect and correct each student's completed worksheet and provides a means for assessing whether the class (or an individual student) needs additional assistance with a given topic. Second, the use of the CAPs enables school personnel to control some of the laptops' functions from the school's central server. For example, e-mail and Internet access can be turned off for all students or for an individual student. (This function might be used if students are using their laptops to take an exam.)

At night, students can use their laptops to complete a specific homework assignment, to complete word processing, to conduct research on the Internet (the school functions as the students' Internet Service Provider), and to e-mail friends and relatives. Students keep their laptops throughout the school year and return them to the middle school during the summer for cleaning and routine maintenance. The middle school's policy of holding the laptops also assures that students who move out of the area during summer break do not take their computers with them.

The principal indicated that several factors guided his selection of the vendor. First, in addition to furnishing the middle school with 270 computers, the vendor also provided a comprehensive package that included (1) training for teachers, parents, and students, (2) onsite maintenance, (3) a process for integrating the laptops into the classroom, and (4) a systematic approach for using the laptops to access online resources aligned with Georgia's middle school curriculum. Second, the principal liked the layout and durability of the laptop computers and the wireless system used to transfer electronic information between students, teachers, and parents. The Ceiling Access Points system and resulting lack of cords or cables required to physically link computers with a central server was also viewed as an advantage, since teachers could configure their classroom without worrying about the placement of the laptop computers (although some parts of a classroom may not pick up the CAP's signal).

[5] As discussed later, this figure covered the cost of the laptop computer and all related training—e.g., parents and students—and technical support.

Training

An important component of the Mobile Technology Project was the onsite training that was provided to teachers, parents, and students. The parent and student training sessions were designed to introduce such key concepts (as how to care for computers, how to use a keyboard and a mouse, and how to access and use the Internet. The teacher sessions covered all of these topics, and introduced an integrated process for accessing online resources that were aligned with Georgia's middle school curriculum. Each of these components is discussed below.

Parents and Students. In August 1998, just before the laptops were issued, the vendor and middle school sponsored a mandatory workshop for all middle school parents. (In subsequent years, this same training has been provided to 6th grade students and their parents.) During the following week, all middle school students were required to attend a 3-day Summer Computer Camp. Both of these workshops covered a range of topics—including caring for the laptops, (e.g., keep the computers away from extreme heat, lock car doors when the computer is inside the vehicle, re-charge the laptop's battery every night), connecting to the Internet from home, the need to monitor what children access on the Internet,[6] an introduction to Windows 95, (e.g., pulling up programs, creating files), instructions of how to use the keyboard and the mouse, and the school's acceptable use and liability policies. Students attending the summer camp also received a T-shirt and a picnic lunch.

Students could not receive a laptop computer until after they attended a training session *and at least one of their parents* had received training and signed a permission form. (Families that move to Towns County during the school year are provided an instructional video that covers the workshop topics.) The purpose of making training mandatory for parents was to (1) assure that parents and students understood the need to care for the computers, (2) involve parents in—and get parents excited about—their child's education, and (3) maximize the likelihood that parents would also make use of the computers, and thereby elect to further their own education (e.g., obtain a GED).[7] A makeup session was conducted for parents and students who could not attend the workshop.

Once students received their laptop computers, they continued to receive periodic training from the vendor. Examples of topics included using the Internet and how to limit and refine online searches. Teachers participated in these training sessions.

---

[6] The project used Cyber Patrol to restrict students access to inappropriate material on the Internet.

[7] At the time the project began, many of the parents had no prior experience with computers.

Teachers. At the time the project was initiated, teachers already had computers in their classroom. According to the principal, teachers were required to use these computers for all administrative functions. In addition, while these desktop computers were connected to the Internet, most teachers were not routinely using learning technologies for lesson planning or other classroom activities.

The training—provided by the vendor—was designed to introduce teachers to computers and the Internet, to enable teachers access standards-based online resources, and to help teachers integrate computers and the Internet into their instructional activities. Specifically, in the months *before* the laptops were provided to the students, the middle school teachers received the following instructions:

- **Initial orientation.** This 1-hour introduction to the vendor's philosophy covered the use of technology in the classroom. This session was also used to provide teachers with a demonstration of the laptop computers they would be using in their classroom.

- **Using the laptop computer.** This 4-hour presentation covered such topics as the use of the battery, modem, local area network (LAN) connection, and software. The session also included a presentation on using specific programs, e.g., Windows 95, Microsoft Works.

- **Using e-mail and the Internet.** This 2-day personalized session was tailored to meet the needs of individual teachers. (The content of these individualized sessions was determined through a pre-assessment survey on e-mail and the Internet that was completed by all of the middle school teachers.) Examples of topics included sending and receiving e-mails, creating and using address books, using automatic spell checks, saving attachments, creating subfolders to save e-mail messages, and Internet basics (e.g., URLs, hyperlinks, search engines, printing, using toolbars, using bookmarks to facilitate access to favorite files, saving pictures from an Internet site).

- **Computer basics.** This 4-hour presentation covered such topics as the use of the touch pad, the mouse, and specific functions and activities (e.g., formatting diskettes, installing software, viewing files and folders).

- **Instructional software.** This 10-hour presentation provided an overview of the types of instructional software that were available for classroom use. As part of this session, teachers were provided a $100 allowance to purchase software for their classrooms.

- **Word processing.** This 4-hour session covered topics related to using the laptop computers for word processing.

Teachers continued to receive training after the laptops had been provided to their students. One purpose was to keep teachers informed of new and innovative uses for learning technologies. Another was to keep teachers engaged and inspired regarding the use of the laptops in the classroom. In the future, training will also be provided to any new teachers who join the middle school staff. In addition,

the vendor has maintained close contact with teachers to assure that their individual instructional needs are being met.

Onsite Technical Support

At the outset of the project, the vendor had two staff members who were available on an as-needed basis (e.g., 2-3 days per week) for onsite training and technical support. One individual was responsible for maintaining the computers and the overall system; the other for assisting teachers and students with how to use the computers and software (e.g., the online inventory of resources aligned with the State of Georgia middle school curriculum).

By the time of the site visit, vendor staff had cut back their onsite time to approximately 1 day per month. To take on the technical assistance role that was initially performed by the vendor, the school identified a teacher who would serve as an in-house technology coordinator. (This individual had previously operated the middle school's technology lab.) In addition to teaching a series of computer courses, the individual was responsible for maintaining the inventory of laptops, for answering teachers' and students' questions about the laptops, (questions and issues she cannot handle are passed on to the vendor), for overseeing the use and repair of laptops, and for serving as the school's primary point of contact with the vendor.

Classroom Use

While teachers enthusiastically supported the decision to equip all middle school students with laptop computers, it is not entirely clear, if they initially understood that this decision would effect their pedagogy. Nonetheless, our classroom observations and interviews suggest that teachers are generally enthusiastic about the laptops and have successfully integrated learning technologies into their weekly instructional routine.

The principal stressed that the laptop computers are a tool that teachers can elect to use—or not use—as they see fit. As such, teachers are not required to use the computers, and staff indicated that they continue to rely on traditional methods as well. Some teachers initially tried to do too much with the laptops, but have since concluded that some lessons still need to be conducted the "old fashioned way," and staff have discussed the importance of ensuring that the Internet not become the sole source of information for teachers or students. For example, teachers and the school's librarian indicated that

students are generally required to reference Internet and non-Internet sources (e.g., books, periodicals) when preparing a research paper.

The principal further indicated that, while some faculty were initially reluctant to use the computer in their classroom, all teachers have since embraced the use of laptops as one of many educational tools that they have at their disposal. Any staff resistance was handled through a "positive attitude," and by constantly talking up the project and reminding teachers that the project initially was their idea. Evidence of this last point—talking up the project—can be found on the Towns County Middle School web site:

> Did you know only 1% of the people in the world own a computer? That is a staggering figure when we stop to realize that every Towns County Middle School student has a take-home laptop computer. Now in the second year of our Mobile Technology Project, we have even expanded to include Towns County High School students with a similar project. And it is great that the parents of our students have access to this technology every evening and weekend as well.
>
> In his State of the Union Address, President Clinton stated, "We must empower parents with more information and more choices." Governor Barnes in an address to the Georgia Association of Educational Leaders said, "Our future is in technology." He went on to say that we must "increase the level of technology training. The key to economic development is in a pool of individuals trained in technology," and that we must have "technology driven students." Well, that we do!
>
> I am very pleased with our response to this global need in Towns County and with the cooperation of the faculty and staff of Towns County Middle School, the Towns County Board of Education, parents, students and the community at large. We are still the only school in Georgia that can boast of this success, and it is all due to you. Congratulations! Keep up the good work and have a good school year.
>
> Sincerely, Stephen Smith, Principal, Towns County Middle School

During the site visit, we observed teachers and students using the laptops to prepare written assignments and complete in-class worksheets. Because the computers did not need to be physically linked to the school's central server, the classroom was configured in a typical fashion—i.e., students were not clustered in a corner of the room to enable links with a central server, nor were students facing away from the front of the classroom to accommodate bulky PCs. This, in turn, appeared to minimize the extent to which the use of the laptops hindered teachers' ability to interact with individuals students or the entire class.

In several classes, we observed students completing lessons that had been downloaded via infrared technology to their laptops. Students in one class were using their laptops to work on an electronic lesson designed to apply their knowledge of appropriate sentence structure. The teachers moved around the classroom helping individuals with specific items and periodically addressing the entire class about topics that appeared to be problematic for numerous students. The students that we observed were fully attentive and focused on their task, which, teachers indicated, had not been the case when students were required to complete these worksheets with pen and paper. When students finished work on the exercise, they hit a submit key, which automatically scored the worksheet. The system then provided immediate feedback on the proper way to complete items that were answered incorrectly. Students scores were also automatically recorded on the teachers' computer. (Several teachers demonstrated how the system generates reports that summarize how each of their students performed on several themes. They indicated that this information might eventually be used to target individual students who require additional help in a given topic, as well as to identify topics that need to be discussed with the entire class.)

In another class, students were using their laptops to type out a written assignment that they had previously composed using pen and paper. Teachers in several classes indicated that their students regularly use the system's desktop publishing capabilities, e.g., to import photos and employ stylish fonts, to improve the presentation of their papers and reports. Teachers also indicated that many of their students prefer to use the laptop to type their notes during class, as opposed to using pen and paper.

According to the principal and teachers, the laptops' impact in the classroom have been further reinforced by the vendor's efforts to provide staff with an online inventory of Internet resources that are aligned with Georgia's middle school curriculum.[8] As part of this ongoing effort, the vendor has provided individualized instruction in how teachers can use this resource to enhance their classroom instruction. (These online resources include curricula that teachers could use to develop their lessons, as well as sites that students could access when completing their homework assignments. School staff indicated that the vendor frequently uses teacher feedback to modify its online offerings.) Once again, the principal indicated that he views this online inventory as one of many resources that teachers have at their disposal. He further stressed that the curriculum has not changed; rather, teachers now have access to significantly more resources when determining how best to teach the curriculum.

---

[8] At the time of the site visit, this online registry had only been developed for the district's middle school teachers and students.

Partnerships

The project achieved its match by soliciting funds from several local businesses to purchase individual laptop computers. According to the principal, this approach helped to create community awareness about the project. The need to increase community awareness of—and support for—the Mobile Technology Project was critical for two reasons. First, a number of the local business were owned or operated by parents whose children would be using the laptops at home. As such, this was viewed as another strategy for increasing parents' involvement in their children's schoolwork. Second, the project was viewed as an opportunity to reinforce the relationship between the school and the local businesses that would likely employ many of the community's high school and college graduates. For example, a representative from a local bank that contributed funds for the project visited the school to demonstrate the electronic spreadsheets he routinely used at work.

Other local organizations that supported the project included the Towns County Adult Education Center, the North Georgia Technical Institute (which provides adult literacy programs at the Towns County Adult Education Center), and Young Harris College, which was slated to provide Internet classes and Internet hookup to participating families (both of these tasks were eventually performed by the vendor and the middle school). The link with the Towns County Adult Education Center was designed to facilitate parents' access to the facility's literacy and GED programs. (The middle school's Parent Teacher Association held a bake sale to raise the funds needed to purchase the project's first laptop.)

D. Problems Encountered

The project did not experience many of the delays and problems that are commonly associated with classroom technology initiatives.[9] Interviews with school staff suggest that this lack of obstacles was due, in large measure, to the vendor's equipment (e.g., the laptops and software worked as advertised) and approach (e.g., vendor staff spent a considerable amount of time at the school and responded quickly to issues as they arose).

Technical Problems with the Laptops

School staff did identify some minor technical glitches associated with the project. For example, the initial batch of computers had to be modified—at no cost to the school—because faulty latches were allowing the laptops to open spontaneously. The middle school's technology coordinator described some minor problems with the laptops, such as batteries not charging correctly, limited memory, difficulty reading the LCD screen, difficulty viewing video), which can often be attributed to the excessive battering students inflict on their computers. Another problem is that the laptops' batteries need to be charged every evening. Students who forget either to charge the batteries or to bring in their laptop can borrow a 1-day loaner from the technology coordinator.

Technical Problems with the Infrared Technology

Teachers also described some problems with the infrared technology used to connect laptops with the school's central server. For example, reflections from tile floors can interfere with the system's infrared technology, thereby disrupting the laptop's wireless link with the school's central server. In addition, if something or someone, for example, a teacher walking around checking on progress, gets between the laptop and the CAP, the connection can be broken causing students who have not recently saved their work to lose whatever they were working on. (The servers are designed to automatically save students' work every 15 minutes.)

Estimating the Number of Laptops Needed for the Project

The principal indicated that he initially underestimated the number of laptop computers that would be required to equip students who began school in the middle of the year. As a result, the middle school was required to request an additional $46,200 from the ARC to cover the cost of adding 30 laptop computers to the original inventory. These funds were also used to extend the warranties on all 270 laptops purchased as part of the Mobile Technology Project.

---

[9] Examples of problems commonly associated with classroom technology projects include delays in obtaining equipment, widespread equipment failure, underutilization, resistance to change, technological obsolescence, and inadequate infrastructure.

E. Evaluation and Dissemination

Evaluation

The principal indicated that while he appreciated the value of collecting and using evaluation data, the school had not obtained any statistics that could be used to quantify the impact of the Mobile Technology Project. For example, the project had not collected any pre- and post-implementation data on students' attitudes and aptitudes regarding computers and academics. Nor has the project systematically assessed changes to teachers' pedagogy or students' learning styles. Problems preventing the collection of these data included a lack of financial and staff resources, as well as the high rate of mobility of the middle school's students, which would hinder efforts to maintain longitudinal data.

Dissemination

The principal indicated that he has received numerous requests for information about the Mobile Technology Project. Since the project began, the school has hosted numerous visitors from schools in and outside of Georgia, soon after the site visit, the project received a visit from the State Superintendent. In addition, the project has been featured on Atlanta television, as well as in numerous newspaper and magazine articles including the *Atlanta Journal*, the Associated Press, and *Appalachia,* a magazine published by the ARC. Finally, the principal has been invited to discuss the project at numerous conferences across the State of Georgia and was a presenter at a recent ARC meeting on best practices. In an effort to prepare for future presentations, the principal and his staff were in the process of developing a Power Point presentation that outlined the history and impact of the Mobile Technology Project.

F. Sustainability and Project Expansion

At the time of the site visit, the Mobile Technology Project was in its second year of operation. As such, the project had not yet faced the need to cover the longer term cost of maintaining and repairing the laptop computers. (Part of the $46,200 in supplemental funding provided by the ARC in 1998 was used to extend the warranties for all 270 laptops.) In addition, aside from the 30 additional laptops purchased with the supplemental funding, there has been no need to expand the number of computers, since incoming 6th graders inherit the computers that are turned in by exiting 8th graders. The principal expressed confidence that when the time came, he would be able to obtain the necessary funding to assure that the laptops remain a permanent fixture in all middle school classrooms. He also described efforts to seek additional funding to extend the use of laptops to the school's 5th graders.

By the time of the site visit, the principal had secured funding to purchase laptops for all 9th grade students to use until they graduate high school.[10] This came about because the project's 8th graders expressed concern that they would lose their unlimited access to computers and the Internet when they entered high school. The laptops provided to the 9th grade students were less expensive and more conventional than the computers used by the middle schoolers. The lower cost of the laptops provided to the 9th graders—$1,000 per unit, as opposed to $1,600 for the machines supplied by NetSchools—reflects several differences in the computers. First, the middle school laptops were sturdier so as to withstand any physical abuse that might be occur through normal use by a while in the hands of 11 to 13-year-olds. (The principal indicated that the computers provided to 9th graders did not need to be as durable since by high school, students should understand the need to take better care of their laptops. Second, the laptops used by the 9th grade students relied on low frequency radio waves to connect with the school's central server. As such, there were no costs associated with the installation of Ceiling Access Points in all of the high school classrooms. Third, the high school teachers did not receive any professional development from the project's vendor, nor did they have access to an online inventory of resources that had been aligned to Georgia's high school curriculum. The high school's technology coordinator indicated that 9th-12th grade faculty would have access to other professional development that was designed to help teachers integrate learning technologies into the curriculum. (The Technology Literacy Challenge Fund Program, which provided partial funding for the 9th grade laptops, requires that at least 30 percent of the grant monies be used for staff development.)

The principal indicated that another reason 9th graders did not keep their original middle school laptops through high school is that they needed access to computers with more memory to handle more sophisticated software programs. In addition to having more memory, the laptops provided to the 9th graders are equipped with a 266MHz Pentium processor and are designed to accept external disk drives (for 3.5" 1.44MB floppy disks or CD-ROMs).

G. Accomplishments and Outcomes

As described in Section B, the Mobile Technology Project had a range of intended outputs and outcomes. This section describes the extent to which the project was able to achieve its stated objectives.

---

[10] Part of this funding came through the U.S. Department of Education's Technology Literacy Challenge Fund (TLCF) Program which supports efforts to increase school and student access to educational technology.

The project has achieved all of the implementation targets and outcomes that were delineated in the original proposal to the ARC. Specifically:

- All middle school students and teachers had been equipped with a laptop. In addition, all students had been provided Internet access at school and at home.
- All teachers, parents, and students had received extensive instruction in the use of the laptop computers and the Internet.
- Middle school teachers had received substantial amounts of inservice staff development to enhance their lesson planning and instruction. In addition, teachers appeared to have successfully incorporated computer technology in their classes. Teachers were also using the laptops to assign homework to their students in an organized fashion.
- Students were using the laptops to prepare reports and other products that were typed and neatly formatted. In fact, some of the students we interviewed suggested that this was one of the project's biggest achievements since they could produce professional-looking reports, and no longer had to retype an entire paper because of errors on the first few pages.
- Teachers also indicated that their students were showing more pride in the content and appearance of their work as a result of their enhanced word processing and Internet skills.
- Attendance in the middle school had increased by 1.36 percent, from 95.84 percent during the first semester of the 1997-98 school year to 97.20 percent in the first semester of the 1998-99 school year. (The principal indicated that prior to the Mobile Technology Project, average attendance across the three grades had already been considerably higher than the state or national average.)
- Students had successfully produced a school web site that provided information about the middle school. They have also used the laptops to produce articles and digital photos for the school newspaper.
- Students have been using e-mail to communicate with other students throughout the nation and the world. In addition to using the Internet to learn about other local and global cultures, students have used e-mail to maintain contact with relatives and former classmates who had moved out of Towns County.
- Students have created a retail store that sells a variety of items and have developed spreadsheets and databases to keep track of sales.
- The parents of middle school students have increased their usage of adult literacy programs. In its final report to the ARC, the project reported a 24 percent increase in participation in GED and adult literacy programs at the Towns County Adult Education Center—from 161 adults during the first semester of the 1997-1998 school year to 199 during the first semester

of the 1998-1999 school year.[11] In addition, the number of adults earning their GED increased by 71.4 percent over the same period, from 7 to 12 individuals. While these increases could be due to a variety of factors, such as changes in job skills needed to obtain employment in the local economy and an influx of new families to Towns County), the director of the Towns County Adult Education Center attributed at least some of these advances to the Mobile Technology Project. For example, she indicated that some parents want to keep pace with their kids or improve their own job skills.

The final report to the ARC provides evidence of other statistical achievements that have occurred since the Mobile Technology Project was initiated. Specifically, middle school tardiness was reduced by 0.13 percent across the three grades—from 99.73 percent during the first semester of the 1997-98 school year to 99.86 percent in the first semester of the 1998-99 school year. In addition, discipline referrals have dropped—from 49 to 27 over the same period. The principal attributed at least some of these changes to the positive environment and enhanced student pride that have resulted from the Mobile Technology Project.

During the site visit, we were provided with several other tangible examples of how the Mobile Technology Project has improved the classroom experiences of middle school students. Teachers indicated that having access to the Internet and the vendor's online inventory of resources aligned with Georgia's middle school curriculum had greatly improved their ability to enhance the quality and originality of their lesson. In addition, teachers felt that their use of laptops had made it easier to engage students both in and out of the classroom by making lessons more interesting, hands-on, and relevant. Teachers also indicated that the depth and breadth of students' papers and reports have also improved, in large measure because students now have easy access to thousands of new resources. Several respondents suggested that writing research papers had taken a new relevance, since students must also utilize a myriad of skills—e.g., using technology, conducting appropriate Internet searches—that will be required in college and/or the workplace.

H. Lessons Learned by the Project and Recommendations for Other Communities

As part of the site visit, we asked administrators and faculty whether, based on their own experiences with the Mobile Technology Project, they had any recommendations for other schools that might want to adapt a similar approach. These recommendations and lessons learned are described below.

---

[11] The report also indicated that the number of adults enhancing their career skills was likely higher—given the fact that some parents use the laptops to access GED and adult literacy programs.

Conduct a needs assessment prior to selecting an approach. The principal emphasized the importance of documenting the need for the project (e.g., how many students lack home access to computers and the Internet) through a formal or informal needs assessment. He also noted that data collected prior to implementation (e.g., computer access, disciplinary referrals, attendance at adult literacy classes) can also be used as a baseline for quantifying changes that occur after laptops have been provided to students.

Use care in selecting a vendor and finalizing the package of options. The principal indicated that he first learned of NetSchools while attending a conference. To identify a vendor, he recommended attending technology or educational conferences and fairs, many of which are frequented by computer vendors. He further recommended selecting vendors who are willing to visit the school to demonstrate their merchandise and have a long history of supplying schools with educational hardware. He strongly suggested that schools require their computer vendors to enter into written agreements regarding such specifics as conditions under which equipment will be replaced at no cost to the school, and the amount of technical assistance and training that will be provided to teachers. To the extent possible, the principal and several others recommended that schools elect vendors that can provide a full package of services, including hardware and software, onsite and timely technical assistance, and of in-service training in a wide range of areas (e.g., operating equipment, using software, accessing the Internet, integrating technology into the classroom) to teachers, students, and parents. Finally, the principal lamented that he had not initially selected a 10-year plan that would have allowed him to periodically upgrade the laptops.

Take steps to ensure stakeholder buy-in. Several respondents emphasized that buy-in among a wide range of stakeholders was a critical factor in the success of their project. As such, they recommended that similar initiatives stipulate that parents be required to attend training *before* their children can receive a laptop to maximize the likelihood that parents will work on the computer with their children. In addition, the principal recommended that schools invest the time required to solicit financial (and other) support from within the local business community to strengthen the ties between schools and the local business that will ultimately employ the schools' graduates. Finally, the principal strongly recommended that administrators work with their teachers so that the laptops are viewed as an opportunity, not an intrusion.

Focus on middle school students if resources are scarce. The principal recommended that if resources are tight, projects designed to equip students with laptops should focus on children between the

ages of 11-14. In his view, children age 10 and younger are too "reckless" and generally lack the maturity and skills to care for laptop computers. Further, elementary school students often need to spend the majority of their classroom time focusing on other basic skills. He therefore suggested that while younger students should be exposed to computers, they are still too young to have the laptops dominate their educational time. The principal further indicated that because teenagers are already being inundated with new things, it would have been harder to grab and sustain their attention with learning technologies. As such, he suggested that teenagers have too many other competing interests and activities to get "hooked" on working with computers outside of the classroom. The principal therefore decided to focus on his 6th to 8th grade students, on the assumption that children between the ages of 11-13 would be most enthusiastic about and capable of working on and caring for computers.

Assign someone full-time responsibility for laptop maintenance. The success of the laptop project can be attributed, in large measure, to the fact that the laptops worked as advertised—and repairs were generally made in a timely manner. As such, administrators and faculty indicated that other schools would be advised to assign someone on staff the *full-time* responsibility of assuring that the laptops remain in working order. During the first year of the project, the vendor had someone on site full time to troubleshoot and help staff become acclimated to their use. By the second year, the middle school technology coordinator had assumed a lead role, and the vendor only had someone on site once or twice per month. The middle school technology coordinator further recommended that schools use the laptops' serial numbers to identify machines that appear to be breaking down frequently and then determine whether those problems are the result of the computer or its user.

Have a plan in place to anticipate student turnover. The principal indicated that high divorce and job turnover rates have resulted in considerable turnover at Towns County Middle School. He therefore recommended that schools prepare for such turnover by having additional laptops on hand for students who enroll in the middle of the school year. These laptops can also be used as loaners when students forget to charge their laptop's batteries or leave the laptop at home.

Provide students with basic computer and typing skills in the school year before they receive laptops. One teacher recommended that students be required to take a preparatory class in a computer lab before they receive their laptops. The purpose would be to minimize the likelihood that a lack of basic skills (e.g., using keyboards and a mouse, typing, accessing the Internet) remains a barrier when the new system is introduced.

I. Summary and Conclusions

The Mobile Technology Project represents a good model of how technology can be used to enhance learning opportunities in the classroom. The provision of laptops to all middle school students—coupled with extensive professional development and online resources—has provided teachers an opportunity to modernize their instructional practices. The project has also provided all middle school students equal access to the Internet and other emerging technologies. Our interviews with administrators, teachers, and students, as well as our limited observations of classroom practices, suggest that teachers and students are making good use of the new opportunities afforded them.

Given the brief history of the Mobile Technology Project, it is not yet possible to predict whether the middle school's use of laptops in the classroom will be sustained over time. It does appear, however, that the necessary ingredients are in place to keep the project operational, including dedicated and enthusiastic leadership, a core of teachers who are willing to experiment with new instructional techniques, and a vendor with a comprehensive approach for infusing technology into the classroom.

Finally, it is too early to tell whether the Mobile Technology Project will ultimately elevate and enhance the longer term educational and career goals of the participating students. It is also too early to assess how the provision of laptop computers will affect the project's other intended beneficiaries—the students' parents. However, given the project's potential to have a lasting impact on students and their families, we recommend that the Towns County Middle School attempt to document participants' educational and professional achievements over time. Even without baseline data, the resulting stories should prove useful in determining the extent to which the school's use of laptops enriched students' views of their world.

Partnering with Parents for Successful Early Childhood Development

Project Location	Eastern Tennessee
Grant Recipient	Tennessee State Department of Education
ARC Number	CO 10947H
ARC Project Type	Preschool
Grant Amount	$75,000
Matching Funding	No matching funds
Dates of Site Visit	March 16-17, 2000
Site Visitors	Brian Kleiner and Kyle Snow

Project Abstract

Teenage pregnancy (often over generations) and the disintegration of extended families and communities have resulted in the diminishing of parenting knowledge passed across generations among many of eastern Tennessee's Appalachian poor. Additionally, other social and economic ills endemic to this region directly or indirectly touch the lives of children, leaving them unprepared to adequately face the challenges of school and life. Partnering with Parents for Successful Early Childhood Development was designed to address these problems. The project targeted parents of children ages 0-5, years in which the foundation is built for healthy development. The project's general aim was to inform parents of at-risk children about parenting practices that will spur healthy development.

The tools employed to accomplish the goals of the project were described as "three legs of the milking stool." The first leg was the dissemination of 20 "Smart from the Start" sheets containing developmental information and suggested activities appropriate for each 3-month period between birth and 5 years. The second leg involved free parenting classes providing instruction to parents in techniques to promote their children's healthy development. The third leg involved encouraging parents to attend Adult Basic Education classes.

During the grant period, the most successful of the three legs was the parenting class component. The project director, class teacher, and an external evaluation of the classes all revealed powerful effects of class attendance. The Smart from the Start sheets were developed and distributed by the end of the grant period. These have since been revised and continue to be distributed to at-risk parents. The efforts to encourage parents to also enroll in Adult Basic Education classes had limited impact.

BEST COPY AVAILABLE

Partnering with Parents for Successful Early Childhood Development
Tennessee State Department of Education

A. Background

Community Characteristics

The main component of the Partnering with Parents for Successful Early Childhood Development project was carried out in the Appalachian regions of eastern Tennessee. Tennessee/Appalachia consists of the counties east of a line drawn from Macon County to Hamilton County. The primary site for the project was Cocke County, located 40 miles east of Knoxville near the Tennessee-North Carolina border. The economy of this region depends in part on strip mining and a small number of factories (e.g., ALCOA). The majority of the population is white and of Scotch Irish descent.

In 1990, 23.7 percent of Tennessee children under 6 years lived in poverty. Of those children under 6 living in single-parent families with their mothers, 62.7 percent lived in poverty. According to the *Tennessee Kids Count Indicator*, the per capita income in Tennessee in 1990 was 35th highest in the nation (up from 42nd in 1979). This is not to say that poverty is endemic. The gap between the richest and poorest families was the 5th highest in the nation in 1990, and 50 percent of Tennessee counties had per capita incomes of less than $10,000 per year. Illiteracy and limited literacy are common, with a statewide reading level of 5th grade. The majority of children living in poverty in Tennessee live in single-parent families, are younger than 6 years, are white, and live in rural areas. Spending for education in Tennessee (in 1992-93) as a whole is less than in 45 other states, averaging $4,009 per student (compared to the national average of $5,598), and state and local expenditures for education in the state are lower than all other states and the District of Columbia. Among the ramifications of these spending patterns is the finding that 39 percent of kindergarteners are not prepared for school.[1]

Characteristics of the Grant Recipient Organization

The Tennessee State Department of Education received an ARC Commission grant for the Partnering with Parents project. As contractor for the ARC grant, the state was responsible for project implementation, including the appointment of subcontractors for different project components, such as the

development of the Smart from the Start sheets, as well as the administration and provision of facilities for the parenting skills classes. Education in the state is funded primarily via sales tax, not property tax as is more typical. As a result, many offices in the state department of education are consolidated to combine federal and state funding sources.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

The eastern part of Tennessee suffers from many of the social and economic ills that plague other rural and urban areas of the country – poverty, hunger, physical and sexual abuse, drug and alcohol abuse, poor hygiene, low education levels, and so on. Many of these problems directly or indirectly touch the lives of young children, leaving them unprepared to face the challenges of school and life. Teenage pregnancy (often compounded over several generations) as well as the increasing disintegration of extended families and communities has resulted in the diminishing of parenting knowledge passed from generation to generation among many of eastern Tennessee's poor.

A host of parenting deficiencies has resulted from this state of affairs, such as poor hygiene (unclean bottles, head lice among children), child abuse, and a lack of understanding of child development. In addition, because of the fragmentation of communities, many parents do not have knowledge of or access to resources available to them. Many parents in eastern Tennessee are forced to raise their children under extremely difficult circumstances with few external supports. Further, these children fall behind in their development to such an extent that they may never fully recover. Many enter school lacking the fundamental cognitive, linguistic, social, and physical skills necessary for success.

Approach

The Partnering with Parents for Successful Early Childhood Development project was designed to address these serious problems. At the time of the ARC grant, there existed no state-level programs addressing early childhood development in the preschool age population in Tennessee.[2] Unlike other

---

[1] Data provided in the project's application to ARC.

[2] It is not clear what, if any, local programs were in place. There were programs addressing teenage parenting, but these were aimed at pregnancy prevention rather than parenting skills.

intervention efforts that focus on K-12, this project targeted parents of children ages 0 to 5, years in which the foundation is built for all higher level cognitive, linguistic, social, and physical development. The project's general aim was to provide parents of at-risk children with information about parenting practices that will spur healthy development and prepare their children for the demands of school and life. While this information may be available through various avenues within the community, the project intended to provide it in an easily accessible way, specially prepared for at-risk families.

The tools employed to accomplish the goals of the project were described figuratively by the original project director as the "three legs of the milking stool," where each leg is essential to its support. The first leg included the dissemination of 20 Smart from the Start sheets, one for each 3-month period between ages 0 and 5, containing developmental information and suggesting activities appropriate for each period. The second leg involved free parenting classes, where parents could take their children and be instructed in a wide range of skills and techniques to promote their children's healthy development. The third leg involved encouraging undereducated parents to attend Adult Basic Education classes.

The approach taken by the project was innovative in that it combined several previously distinct efforts into a single coherent effort and developed project materials specifically targeting the population of greatest need. Prior to the Partnering with Parents grant, a number of resources were available for at-risk parents. First, adult basic education courses were widely available throughout the state. The project's efforts were aimed at recruiting parents into these classes. Resources for families included a local Teen Learning Center and the (then) emerging Family Resource Centers. The project conducted the parenting workshops in conjunction with the development of a family resource center in the county. The Smart from the Start materials were the brainchild of the original grant writer as a means of providing parents with information about typical child development and with activities that they could use to interact with their children in ways to promote healthy development. These were developed to be read at the 5th grade level.

Status at the Time of the Site Visit

The period of the Partnering with Parents ARC grant was from February 1992 to June 1993. While ARC funding ceased in 1993, much of the work developed under the grant has been sustained and expanded to the present time (see section F). For example, the Smart from the Start sheets continue to be disseminated (but more broadly across the state), and parenting classes influenced by those under the ARC grant are currently held under the aegis of the state's Family Resource Centers.

C. Activities Undertaken As Part of the ARC Project

Parenting Classes

During the term of the ARC-funded Partnering with Parents project, the project subcontracted with a school system in eastern Tennessee to create an "early childhood development laboratory and activity center." The Cocke County School System, 40 miles east of Knoxville near the Tennessee-North Carolina border, was selected in response to an RFP, based on several factors, such as the availability of accessible facilities and a high concentration of low-moderate income families. Parenting classes were held in Newport, Tennessee, at the Ben Hooper Vocational School's Teen Learning Center for 12-week sessions, during evenings one night per week.

The first classes in the fall of 1992 served eight parents from at-risk families (along with their children). Eleven families participated in the winter 1993 classes, and five parents took classes in the spring of 1993 (without their children). Although parents were recruited in a number of ways, including newspaper advertisements and referrals, the participation of nearly all parents in the classes was court-ordered.[3] To regain custody of their children, these parents were ordered to attend class at least one night per week. Children of these parents were brought to the class by their foster parents and cared for by a project assistant.

According to the Partnering with Parents final report, the parents who participated in the classes were for the most part "dysfunctional in the extreme. The clients lacked basic information on hygiene, nutrition and elementary intervention techniques appropriate for young children." The evaluator's reports for the classes held from 1992 to 1993 describe in sometimes disturbing detail the conditions of the participating at-risk families. Consider, for instance, the following case:

> Participant F was a 19 year old, never-married mother of two daughters, ages 2 months and 21 months. She lived in a subsidized housing project and received AFDC. She was a high school graduate with a drug abuse, mental hospitalization, suicide attempt history. The father of the girls saw them frequently, but was reported to be physically abusive to "F." The maternal grandparents have physical custody of the 21 month old, and soon after the completion of the class "F" also lost custody of her younger daughter. A home

[3] The project had developed a relationship with a local judge that allowed for court-order completion of the parenting classes to be a possible sentence for parents brought before the court for cases of child maltreatment, or others who were brought to the court's attention through custody disputes.

visit by the instructor revealed unsanitary conditions such as "filthy baby bottles and an inhumanly dirty house." The baby was hospitalized for dehydration. "F" reportedly left her babies at home unattended with great frequency.

Classes were about half lecture and half interactive instruction, where parents would practice techniques with their children, based on the "active parenting" model. In addition, parents would watch videos and do exercises from a workbook. Parents in the classes were taught a host of fundamental parenting skills, including how to give a bath, how to provide basic nutrition, how to discipline a child (avoiding corporal punishment), and how to encourage and support language development. Parents were also taught about the developmental stages of their children and which behaviors to expect at each stage.

The teacher of the classes indicated that while she had no formal background in child development, she attended active parenting classes in Atlanta and took a child development course at Carson-Newman College. During the year of her service, she had one assistant who would care for the children in the nursery while parents participated in the lecture part of the class. The project director noted the class instructor's skill and dedication to the project as fundamental to its success.

Smart from the Start Sheets

According to the project director, the strongest leg of the "milking stool" was the Smart from the Start sheets. The simple but powerful and innovative idea behind the Smart Start sheets was to diffuse vital parenting information to at-risk parents in the form of easy-to-read and attractive sheets that could be posted at home on the refrigerator under magnets that accompanied them. With the sheets in plain view at home, parents could have ready access to helpful information and suggestions appropriate to their children's age. Smart from the Start sheets provide information on cognition and motor skill milestones of development, as well as recommended activities, safety and nutrition tips, and resource information.

Twenty sheets were developed on legal size paper, one for each 3-month period from ages 0 through 5. The project director explained that at that time, there was nothing readily available upon which to base the Smart Start sheets. After making numerous queries around the state, he discovered that some work had been done along these lines at the Johnny B. Watson Teen Learning Center in Memphis (through the Memphis City Schools Collaborative Care Project), which was consequently subcontracted to develop the Smart Start sheets.

The sheets are attractive and written at no higher than the 5th grade reading level so that parents with poor literacy skills will not feel intimidated by them. Each sheet includes specific advice to parents. For instance, the Smart Start sheet for parents of babies from birth to 3 months explains:

> Your baby is an amazing little one. As a newborn, he needs you to hold him, rock him, sing to him, and talk to him. He depends on you to feed and care for him. He likes to snuggle and hear your voice. You should go to him when he cries and see what is wrong. Don't worry about spoiling him. He cries because he needs something: milk, a dry diaper, warmth, or he may just be lonely or uncomfortable.

Also included in each sheet is information about what parents should expect (and not expect) in their children at each stage of development. For example, the Smart Start sheet for toddlers 3 through 6 months lists some of the things they might do during this period:

- Laugh out loud.
- Reach for toys or people.
- Roll over.
- Hold head steady.
- Turn toward a familiar voice.
- Push up with arms while on stomach.
- Notice small objects.
- Sit up straight with help.
- Babble and coo.

Further, each sheet contains suggested activities that parents might do with their children. For instance, the Smart from the Start sheet for 6- through 9-month-olds suggests the following "things you can do everyday to help your baby grow":

- Read to him daily. Show him pictures in books and point to and name the people, as well as other things in the picture books.
- Place him on the floor on his stomach. Encourage him to move toward you by clapping your hands and laughing.
- Roll a ball to him. As he grows and gets used to the game, he will try to roll the ball back to you.

- Hide a ball or other object under a blanket while he is watching you and let him find it. He will learn that objects-out-of-sight don't disappear forever.
- Give him a pan and show him how to bang on it.
- Place round oat cereal on his highchair tray and let him practice picking it up and putting it in his mouth. His eye and hand muscles will get stronger and begin to work together.
- Let him practice dropping unbreakable things like soft balls over the side of the bed in order to learn what happens when he drops something.

During the period under the ARC grant, 320,000 Smart Start sheets and 25,000 refrigerator magnets were produced and distributed through agencies that make regular contact with at-risk parents, such as Women, Infants, and Children (WIC), EVEN START, county offices of Health, Human Services, and Early Childhood Education Programs, and Displaced Homemaker Programs. This was an especially effective arrangement with respect to WIC, since mothers are required to visit every 3 months, coinciding with the Smart from the Start sheets. The Smart from the Start sheets were sent to these agencies following an introductory letter explaining their purpose. According to the Partnering with Parents final report, the Smart Start sheets were received enthusiastically by practitioners throughout the 50 counties of Tennessee/Appalachia.

Adult Basic Education

The project director explained that the adult basic education (ABE) leg of the milking stool was the weakest of the three. The stated goal of this component of the project was to "encourage illiterate or undereducated parents to participate in Adult/Basic Education classes." The reasoning behind incorporating this goal into the project was that education presumably better equips parents to raise their children.

In order to encourage parents to attend ABE classes, each Smart Start sheet and refrigerator magnet displayed the toll-free telephone number of the State Office of Adult/Basic Education. Unfortunately, the State Office received very few calls from interested parents during the year of the ARC grant (although this does not preclude the possibility that some parents did attend ABE classes without the State Office's mediation).

D. Problems Encountered

Although the project encountered various minor problems, none significantly compromised the project's work.

Enlisting Parents for Classes

The most general problem facing the project was logistical – how to reach parents in the first place? It seems to be the case that the most difficult step for a project of this type is establishing first contact with at-risk families and persuading them (without offending them) that they might benefit by learning more about parenting practices. However, the project director noted that parents seemed to welcome the help when they could take advantage of it.

That most parents in the parenting classes participated by virtue of court order reflects the difficulties of attracting volunteers. Additionally, even interested parents might be unable to attend the classes because of lack of transportation or other reasons. In at least a few cases described to us, the parenting class teacher would drive to the family's home to provide transportation.[4] The final evaluation report reinforces this point:

> Due to the difficulty and frustration experienced in obtaining participants prior to each session, it is suggested that careful planning to identify and recruit for future programs be considered. Considering census data from Cocke County, an at-risk population is present in great numbers.

Reaching At-Risk Parents

Similarly, although the Smart Start sheets were distributed through various organizations, many parents in need do not show up at these places, or do so only sporadically. Thus, not all parents of at-risk children could be reached via the mechanisms built into this project. Further, although the project director was confident that the materials were being disseminated, it is not clear how they were presented. For example, some services may have simply handed the sheets to the parents, while others may have staff that sat down and reviewed the materials' content and intent with parents.

Producing and Storing the Smart Start Sheets

The production and distribution of the sheets took longer than anticipated. While the delays in production were primarily due to the need to write the sheets at an appropriate reading level, this delay was likely a necessary one that has ultimately contributed to the project's success, as it made materials more accessible to a greater number of people. Another minor problem involved finding storage space for the many boxes of Smart from the Start sheets and magnets. By the time of the site visit, all of the magnets had been distributed (and are no longer produced), and boxes were stored at the central office, but many were distributed across the state for local use and storage.

Staffing

Adequate staffing was another problem mentioned by site visit respondents. Although the parenting classes included an assistant to care for the children during lecture time, it was explained that additional assistants were necessary so that older children brought to the facility could also be cared for.

Encouraging Adult Basic Education

As mentioned earlier, the hotline for adult basic education classes received very few calls during the period of the ARC grant. The project director and other respondents seemed to be at a loss as to why this was the case. They did suggest, however, that many parents may have felt compelled to take the classes for the sake of their children, but did not see the connection between their own education and the ultimate effects it would have on their children.

E. Evaluation and Dissemination

Evaluation

During the period of the ARC grant, a third party at Carson-Newman College was subcontracted to evaluate the parenting classes. Three separate evaluations were conducted, one for each of the three

---

[4] She also noted that in some cases this strategy was nerve-racking because of the prevalence of guns and/or unleashed dogs in many houses. Further, in some instances the instructor drove many miles to the family home only to have the participants either be away from home or refuse to go to the class, resulting in a wasted, often long trip.

class sessions conducted during the year of the grant. Each consisted of background information on the class participants, developmental milestones and parenting skills pre- and post-tests, open ended interview results, and commentary.

The background information provided in the evaluators' reports presents a vivid and disconcerting picture of the difficulties and conditions faced by the parenting class participants. One example was presented earlier in this report. Consider one more case:

> Participant G was a never-married 21 year old mother of a 30 month old boy. She was a student in the adult high school, unemployed, and received AFDC and food stamps. "G" and her son lived with five other family members, six dogs, and a cat in a rural three room house. The house had no heat and low sanitation standards. The young boy's paternity was unknown, but the instructor made observations during home visits that led her to suspect that the child's maternal grandfather was his father.

Dissemination

The Smart from the Start sheets have generated a great deal of excitement in Tennessee, and the project director said that the State Department of Education has received many calls and inquiries from various sources wanting to distribute the papers to other audiences. For example, Carson-Newman College and several other institutions have asked for permission to use the sheets in classes such as nursing and applied child care. The Smart Start sheets are available and free for reproduction and are currently being adapted for presentation on the web.

F. Sustainability and Project Expansion

Sustainability

After the ARC grant ended in 1993, the state took over funding, and this arrangement has continued to the present day. The work that began under the ARC grant has been maintained, although with some minor modifications. The parenting classes were used as a model for classes that are now held under the aegis of the Family Learning Centers (FRCs) throughout Tennessee. The Smart from the Start sheets continue to be produced and distributed in much the same fashion as they were in 1992-93. The project director noted that the continuing work initiated under the ARC grant is supported wholeheartedly by the state, with special commitment from the State Commissioner. It should also be noted that the

continued state funding is due in large part to the persuasive charge and vision of the Director of School Support Services in the State Department of Education, who has been a leader in efforts to improve the welfare of children in Tennessee. It appeared that her success in maintaining the state's interest was a combination of a simple, compelling idea and persistence. The project also has developed relationships with a number of service areas at the state level, including human services and its many offices, thus distributing the costs across funding streams.

Current funding for the Smart Start sheets comes from a host of state agencies, including the Office of the Governor of the State of Tennessee, the Department of Education, the Department of Health, the Department of Human Services, the Department of Transportation, the Department of Mental Health, and the Head Start Association. It was explained that since Tennessee is "resource poor," agencies find it mutually beneficial to collaborate and share resources. Interagency meetings are held at least once per month. Clearly, one of the strengths of the Smart Start endeavor is its ability to galvanize support among diverse organizations with varying purposes.

Future plans to procure recurring funds include garnering support from corporations (e.g., Walmart, Kmart, Federal Express). One possibility mentioned was to include the names of corporate sponsors on each Smart Start packet. Also included in each packet might be coupons from those companies that parents might use for their families.

Project Expansion

The work that began in the Partnering for Parents project did not end upon the expiration of the ARC grant. The Smart Start sheets continued to be produced and distributed, but more widely to agencies throughout Tennessee, rather than just within the Appalachian region of the state. Currently, the Smart from the Start sheets are being revised, and the plan is to distribute them to new parents all at once in calendar form, rather than one at a time. The sheets will now be enhanced to include additional activities and more graphics, and they will be more attractive and readable. They will also be copied on thick cardstock for better preservation. At the time of the site visit, the revised Smart from the Start sheets were being carefully proofread and scrutinized, in order to avoid including any statements or images that might be misleading and potentially harmful.

Another ambitious expansion currently underway involves making the Smart Start information available on the Internet. At the time of the site visit, much of the Smart Start material had already been

programmed. The pages were visually impressive, engaging, and simple enough to be navigated by unsophisticated computer users. It is hoped that the web Smart Start information will reach a greater number of parents, even though many of those parents who use computers will be more affluent and presumably less in need. Nonetheless, it is certainly the case that all parents could benefit from this information. The Department of Education plans to announce the website some time in the spring of 2000 and hopes to have the web address published in state-wide newspapers.

As for the parenting classes, the original groundwork laid by the ARC funded classes was taken up and employed by some of the state-sponsored Family Resource Centers (FRCs) in Tennessee, initiated at about the same time as the "Partnering with Parents" ARC grant. It was apparent that the parenting classes provided for by the ARC grant became a model for the delivery of such support services across the centers in the state. The 104 FRCs in the state of Tennessee share a common mission: "to assist families through information and training, and to help families learn to resolve problems through the collaborative efforts of many disciplines within the community (educational, medical, psychological, business and social services)...." FRCs offer services to at-risk families such as: resource and referral information, family counseling, needs assessment, student groups, service learning projects, tutoring programs, and parenting classes.

The director of the Cocke County FRC works as a teacher and social worker, and she has been leading FRC parenting classes for several years. She explained that the work done in the original ARC-funded classes was very influential and served as a model for later FRC classes in that region. For example, some of the content, materials, and pedagogic approach of the ARC-funded parenting classes were later taken up in the FRC classes.

G. Accomplishments/Outcomes

The Partnering with Parents project set out to achieve three goals:

- To provide developmental information on each stage of infant/child growth and a listing of age-appropriate parent-child activities for intellectual stimulation.
- To make this information available to all "at-risk" parents of children ages 0 through 5 years within Tennessee/Appalachia.

- To encourage illiterate or undereducated parents to participate in adult basic education (ABE) classes and parenting skills classes.

In general, each of these goals was at least partially achieved, with wide success in two of the three "legs of the milking stool." Respondents during the site visit further indicated that it seemed that the most at-risk parents and children benefited the most from project activities. A summary of the outcomes associated with each of the project activities is given below.

Smart from the Start Sheets

During the term of the ARC grant, 320,000 Smart Start sheets (and 25,000 magnets) were produced and distributed through agencies that regularly come into contact with at-risk parents, such as WIC and EVEN START. The sheets were well crafted and contain a great deal of helpful information and advice about age-appropriate parent-child activities for intellectual stimulation, as well as information on available resources, safety, and nutrition. That these materials were eventually placed into the hands of parents is evident by the demands for new supplies of Smart Sheets from these agencies during the year following the first distribution up to the present time. Although no data were collected to prove that parents are making use of the sheets, the fact that they continued to be taken home by parents is partial evidence of their usefulness.

Parenting Classes

The instructor of the parenting classes explained that her experience was one of the most valuable of her life. She said that while many of the parents were resistant at first (and sometimes hostile), most became receptive to learning over time and revealed a sincere desire to improve their parenting skills and the welfare of their children. The story was told of one court-ordered male parent who complained bitterly at first about having to come to "some blankety-blank" parenting class. Soon, however, this same father could be found on his knees in class enthusiastically engaged in an activity in which he played the role of a child. One mother who took the class told the instructor, "You saved my marriage."

We were also told of another father, described as "a mountain man," who had participated in the parenting class and had had a history of child abuse. Some months after the class, this man was seen in public lecturing another man who had openly hit his child. As explained by the instructor:

> He put his hand on the man's arm and said "that's not the way to do that...," because he had just learned three months before that you don't just hit the kids. He had learned to advocate, which is a real sign of change. You get this kind of "ripple effect" where changes spread through a community.

According to the instructor, the most successful parents in the classes were "the ones who had been emotionally abused in one way or another." She suggested that these parents were most in need, and so in the best position to benefit from any intervention. Some parents did quit the classes before completion. For parents attending of their own initiative there were no consequences for leaving the program, but for parents required to attend, the failure to complete the course was viewed as a violation of a court order. According to the evaluators' final report, the three sessions had an overall 71 percent completion rate.

The most rigorously evaluated component of the project was the parenting class component. For session one, the developmental milestones pre- and post-tests on 25 items revealed that parents generally gained in knowledge during the course (for the pre-test, correct responses ranged from 12 to 40 percent, whereas for the post-test, correct responses ranged from 44 to 63 percent). As for the open-ended interviews, the evaluators reported an increase in confidence among participants with respect to their abilities as parents: "The participants conveyed a greater sense of affirmation in their role as parents."

The evaluators' conclusions for session one were consistent with those of the instructor – parents who participated in the classes were enthusiastic and completed the course feeling empowered and more knowledgeable:

> The evaluators were amazed that the participants readily cited specific examples of new information which they had gleaned.... Most of them noted having learned discipline techniques as alternatives to physical punishment, developing a sense of support among themselves, and seeing positive changes in the behavior of their child(ren).

It was noted that for classes to be fully effective, they would need to be more frequent and of greater duration, since "private behaviors like parenting and attitudinal changes occur gradually over extended periods of time."

For session three, the evaluators' conclusions were not all as positive. They noted that participants were less committed and cooperative and did not appear to want to learn or make changes in their parenting practices, presumably because all four were court-ordered to attend. In addition, they did not bring their children to the classes. On the other hand, they state that these same participants held "extremely positive impressions of the class."

Overall, the evaluations lend credence to the importance and effectiveness of such classes. Commenting on the parents' perceptions of the class over the course of 1 year, the evaluator's final report states: "Each of these parents would enthusiastically recommend the program to other parents, as they felt especially fortunate to have gained in their knowledge of parenting and to have experienced a vital support network."

With respect to the Smart Start sheets, no evaluation was done to determine their effectiveness. Thus, while it is certain that the Smart Start sheets were distributed through various organizations, there are no data to demonstrate how or if parents actually made use of them. The anecdotal evidence provided during the site visit suggested that parents did use them, and that the information provided often resulted in parents adopting new strategies with their children. It must be noted, however, that these changes were seen primarily among parents also enrolled in the parenting classes.

Adult Basic Education Classes

The project director estimated that approximately six parents called for information about ABE classes due to the Partnering with Parents project. Because the ABE classes did not systematically collect data about how parents knew about the courses, it is not known how many referrals were due directly or indirectly to the project.

H. Lessons Learned by the Project and Recommendations for Other Communities

Although a variety of factors may have contributed to the overall success of the Partnering for Parents project, it appears that the principal reason for its success was the inherent power of its conception. This project, while relatively simple in its design, addressed a very real and urgent need in impoverished community by providing parents with a straightforward and easily applicable set of tools for improving the lives of their children. Without the information furnished through the Smart Start sheets and parenting classes, many parents of at-risk children have little chance of gaining basic knowledge of good parenting practices. As noted by the project director, "You get a product that is immediately usable by masses of people and it will sell itself."

Participation of programs: community buy-in is necessary. With respect to the Smart Start sheets, the strength of this component's purpose resulted in the enthusiastic willingness of those programs enlisted (such as WIC and EVEN START) to distribute the forms to at-risk parents. The buy-in was largely a natural process as various agencies realized that the Smart Start sheets were another avenue through which they could achieve their own goals.

Simplified material is critical. The Smart Start sheets should be designed to be easily readable (written at most at a 5th grade reading level), without containing a potentially overwhelming amount of information. This will allow parents with poor literacy skills to understand and appreciate the material. Moreover, more literate parents might find the sheets to be simply written but still very useful.

Class instructors should be caring and encourage parent networking. The success of the parenting classes may have been due to several factors. First, although most of the parents participating in the classes were ordered to attend as a condition for regaining custody of their children, many displayed a hunger for guidance and help. According to the instructor, parents naturally formed support networks among themselves, and many found the classes to be engaging and meaningful experiences. The instructor noted that the interaction among parents might be the most significant aspect of the classes, since it makes plain and provides a forum for discussion of their common problems and needs. Second, the instructor told us that she cared deeply about the welfare of the parents in her classes and their children, and she conveyed this through her teaching.

Considerable effort is required to encourage the participation of at-risk parents. It should be noted that while efforts were certainly made to encourage parents to participate in ABE classes and parenting skills classes, the obstacles to gaining the participation of at-risk parents on these fronts were greater than anticipated. Future work should include mechanisms to help locate at-risk families and to reduce the resistance of parents to new learning and education. This might involve more intensive marketing and advertising.

Leaders are needed to articulate and argue for the project's purpose. The sustainability of this project was due in large part to the receptivity of the state and its recognition of the importance of supporting at-risk families in the early development of their children. In addition, there were key figures in place within the State Department of Education who were deeply committed to the mission of helping at-risk children in Tennessee, had open lines of communication with the State Legislature, and were able to procure the funding needed to implement their vision.

I. Summary and Conclusions

Parenting knowledge is not inborn, and its diffusion depends on strong extended families and community support. When these social bonds become fragmented and teenage pregnancy recurs over several generations, parenting knowledge may be severely compromised. Partnering with Parents for Successful Early Childhood Development is a simple yet innovative and valuable project that addresses this problem and would most probably benefit other at-risk populations around the country.

Projects such as Partnering with Parents would better advance their cause by documenting outcomes in order to assess and demonstrate the impact of their activities. For instance, other communities might be more encouraged to make use of the Smart Start sheets if there were evaluation and documentation showing that at-risk parents benefit from these materials.

School Outreach Project

Project Location	Jasper, Georgia
Grant Recipient	North Georgia Community Action, Inc.
ARC Number	GA 11307-93-I, GA 11307-94-C1
ARC Project Type	Elementary Education
Grant Amount	$115,500
Matching Funding	$148,500
Dates of Site Visit	March 1-2, 2000
Site Visitors	Laurie Somers and Gary Silverstein

Project Abstract

The School Outreach Project provides families of at-risk kindergarten and first grade students in three counties in North Georgia the individualized support necessary to maximize the likelihood that children arrive at school healthy and ready to learn. Following a referral by a teacher, a student's parents are contacted by the outreach worker who offers to help with their child's academics and any other problem areas. Outreach workers then visit families' homes to tell them about the program and the types of services offered. If parents are interested, the outreach worker secures parental permission for the child to participate. Significantly, the outreach workers work with the entire family, including parents, grandparents, and other siblings. Most often they help children with reading and mathematics and other enrichment activities, and educate families about hygiene, stressing the importance of bathing and watching for head lice. They provide access to multiple resources, such as referrals to mental health providers, assistance obtaining Medicaid, transportation to doctors, and assistance in navigating complex education, public assistance, and child care systems.

During the family's first year in the program, the household is considered a "focus family," indicating that its members are provided weekly or twice weekly services. After that, the family is a "contact family," and the outreach worker makes infrequent checks with the family and teachers to ensure that the problems have not returned. The outreach workers generally maintain contact until the family moves out of the NGCA service area or refuses services.

For the children and families served by School Outreach, the project has met its goal of improving school performance, self-confidence, social skills, and interest in learning. The program is currently serving 125 children, 75 of whom are in their first year of intensive services. It is clear from talking with outreach workers that the children and families all benefit in some way.

BEST COPY AVAILABLE

School Outreach Project

North Georgia Community Action, Inc.

A. Background

Community Characteristics

North Georgia comprises the counties Catoosa, Chattooga, Cherokee, Dade, Fannin, Gilmer, Murray, Pickens, Walker, and Whitfield. The School Outreach Project has worked in different counties at different times throughout its 10-year history. Under its Appalachian Regional Commission (ARC) grant, the project worked in Pickens, Cherokee, and Fannin Counties. Since then, Fannin County has dropped out, and now the program operates in Gilmer County, along with Pickens and Cherokee. The 1997 populations were Pickens, 18,574; Gilmer 17,891; and Cherokee, 126,838.[1] These counties were between 96.9 and 99.4 percent white in 1996. In 1993, poverty rates were 13.8 percent in Pickens County, 17.3 percent in Gilmer County, and 7.5 percent in Cherokee. Among families served by the School Outreach Project, 99.0 percent are receiving some form of public assistance.

Characteristics of the Grant Recipient Organization

North Georgia Community Action, Inc. (NGCA) was organized in 1974 with funding from three existing community and economic development agencies to serve six surrounding counties. NGCA's mission is "Helping People to Help Themselves," and the agency administers a number of federal, state, and locally funded programs for the counties' low-income and elderly residents. Programs include community outreach (to refer residents who are in need to appropriate agencies), energy assistance, food assistance, a food bank, job placement and short-term job training, home-based family support, aid to parents, child abuse and neglect prevention, a non-fixed-route transportation system, home delivered meals for seniors, senior community service and activities programs, and the School Outreach Project. NGCA has received several ARC grants, including School Outreach grants from 1989 to 1995 and Mountain Area Transportation System grants in 1979 and 1980.

---

[1] Cherokee County borders Atlanta and has increased by almost 40,000 people since 1990 (40.6 percent growth), whereas the other counties have only increased by about 4,000 (28.7 percent growth in Pickens County and 33.8 percent growth in Gilmer).

School Outreach began in 1988 at the Dug Gap School with funding from the United Way of Northwest Georgia and the Whitfield County School System. In 1989, three schools were added with funding from ARC and the Children's Trust Fund Commission. Through 1990 and 1991 these funders continued the grants and added two schools in Gilmer County, while Murray County began funding its own school outreach workers. In 1993, ARC funding was used to expand the program into Cherokee, Fannin, and Pickens County[2] with local county matching funds. ARC funding for these counties was continued for FY 94 and FY 95. After 1995, all School Outreach funding was provided by the state and local school systems.

NGCA provides program oversight, hires and manages all outreach workers, intercedes with the local Department of Family and Child Services, and meets other needs of these families.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

The School Outreach Program began in 1988, growing out of several other family and home visit programs administered by NGCA throughout the 1970s and 1980s. NGCA staff observed the inter-generational cycle of disregard for education. They saw that children whose academic, social, and developmental levels were below their peers' frequently had parents who, like their children, had attended school irregularly or dropped out. Prior work with families in their own homes and requests for help from teachers led NGCA staff to conclude that working within the schools was not enough. They found that many parents simply were not aware of the influence they had on their children's educational experiences. Project staff listed a number of factors contributing to parents' inability or unwillingness to support their children's education. The 1993 project application states:

> Families live in neighborhoods where education is not seen as a high priority or as something realistically attainable. Educational nurturing is not an accepted value for parents who have not completed high school, who may be illiterate themselves, and who live under the stressful conditions of low wage employment.
>
> Feelings of inferiority, cultural differences, perceived unfriendliness of teachers, hostility toward school for perceived wrongs, and limited communication and problem-solving skills are the norm…

---

[2] This FY 1993 grant is the award being studied and surveyed.

> For severely dysfunctional families, there may be problems with drugs and alcohol abuse, absence of parental supervision and protection of children, nonacceptance of traditional standards for hygiene and sanitation, impoverished living conditions, family violence, and adult illiteracy. Communication between the parent and child is usually poor and there is little or no parental encouragement and support.

NGCA staff believed that by providing regular support to families, in addition to direct academic help for students, they could help ameliorate some of these problems.

Approach

The School Outreach Project provides families of at-risk kindergarten and first grade students the individualized support necessary to maximize the likelihood that children arrive at school healthy and ready to learn. Following a referral by a teacher, a student's parents are contacted by the outreach worker who offers to help with their child's academics and any other problem areas. Outreach workers then visit families' homes to tell them about the program and the types of services offered. If parents are interested, the outreach worker secures parental permission for the child to participate. Significantly, the outreach workers work with the entire family, including parents, grandparents, and other siblings. Most often they help children with reading and mathematics and other enrichment activities and educate families about hygiene, stressing the importance of bathing and watching for headlice. Also, they provide access to multiple resources, including referrals to mental health providers, assistance obtaining Medicaid, transportation to eye doctors and dentists, and assistance in navigating the complex education, public assistance, and child care systems, among others.

During the family's first year in the program, the household is considered a "focus family," indicating that its members are provided weekly or twice weekly services, depending on their need. After that, the family is a "contact family," and the outreach worker makes infrequent checks with the family and teachers to ensure that the problems have not returned. The outreach workers generally maintain contact until the family moves out of the NGCA service area or refuses services.

Status at the Time of the Site Visit

The project is currently operating in four schools in the three-county area and serving 125 children, 75 of whom are in their first year. Initially a program for kindergarten and first grade students, it now works with children throughout elementary school. Most children beyond elementary school who

receive services were participants in the early grades or are siblings of currently participating children. Five outreach workers (two at one school) are employed by School Outreach. Two have been involved since the beginning of the project, and a third has been working there since the early years.

Funding is provided by the counties' local school funding and state funds. The counties pay a percentage based on the size of the school; Gilmer County pays more because two schools participate. The NGCA executive director feels that local school funding support represents significant and critical buy-in of local stakeholders.

One of the counties originally funded by ARC, Fannin County, is no longer participating. After a new school principal and county superintendent came in, they decided not to fund the project in the county due to financial concerns. NGCA has tried to continue the relationship with these families through other programs.

C. Activities Undertaken as Part of the ARC Project

While the services in each of the counties differ slightly with each outreach worker and school leadership team, the basic premises are the same. Over time, the services have changed, as principals and teachers have looked beyond just academic needs and become concerned with the general well-being of the children. Initially, attendance was viewed as the most critical problem; this has since given way to hygiene and academic problems. In the years since School Outreach began, school policies have been implemented that prohibit students coming to school with head lice and require students to be sent home if they are found. Project staff also note that the schools and personnel involved also dictate some needs. For example, one new principal has focused on addressing hunger, transportation, clothing, and providing opportunities for socialization, not just academics.

Kindergarten and first grade students were initially targeted for project services because staff felt they could have the greatest influence on the children's future educational experiences by reaching them early. The individual schools were selected by the county for their perceived need.

Referral System

The process begins when a teacher refers a student to School Outreach. Initially, the project used a Factor Scale for Measuring Socio-Academic Achievement, which required teachers to rate each student on nine factors (attendance, grades, aptitude and skills development, study and learning habits, parent/school relationships, health and hygiene, transience/mobility, socialization with peers, and response to adult authority) at the beginning and end of the school year. After receiving fewer referrals than expected, project staff concluded that the form was too complex and time-consuming to ask teachers to complete in the first weeks of the school year, particularly when they did not know the students.

The new form has a short list of areas of need (family, academic, health, hygiene, social, emotional, financial, parent-teacher contact, other) and asks teachers to briefly indicate the specific concern (two lines are provided). Teachers only complete the form for those students they refer. The referral can be completed at any time during the year, and referrals can also be made verbally.

Teacher orientation to the School Outreach Project is provided at the beginning of each school year. Outreach workers explain the purpose of the program, how their work can help the teachers, and how children become involved. With a less structured referral form, staff have been training teachers to apply to subjective criteria of needs as consistently as possible, to ensure that the children most in need would be referred. The training is designed to inform teachers of the types of services provided for students' differing needs. The teachers and schools are not given any limit to the number of students they refer, but outreach workers and principals suspect that they prioritize their students according to need before making referrals.

Outreach workers generally have a brief conference with the referring teacher to make sure they understand all that is known about the situation. At this point, the outreach workers sometimes must prioritize their list of focus families. At least two outreach workers are too overloaded to follow up with their current referrals.

Initial Visits

After conferencing with referring teachers, outreach workers make their initial visits to the families' homes. They begin by telling the parents that the school said their child might need some extra help with reading and offer to leave some books and to work individually with the child. They also

indicate that the school suggested the parent might need some other help with the child, such as getting around; they mention that the agency might have some extra food and ask if the parent ever needs more food. Outreach workers offer the services in a very friendly way and typically do not mention the reason the student was referred. Moreover, they present themselves as separate from the schools—not another extension of an institution many families already fear—and act as an ombudsman who can help bridge the gap between the school and home.

Most parents react very positively. Outreach workers have only seen one flat-out refusal in 5 years and attribute that to the parent's fear that participation would result in the children being taken from the home. Most of the families have not heard of the program because it is intentionally underpublicized so that people do not think they are being picked on for being poor or deficient parents. However, the outreach workers are quite visible; in fact, outreach workers have found that the children often feel singled out in a positive way. They see the program as fun and feel important because they have their own "special adult" who cares about them.

After meeting with the parents, the outreach workers report back to the teachers about the home situation, what might be causing some the problems observed (e.g., lack of adequate home heating, abusive father). At least one teacher commented that this knowledge does make a difference, and she is better able to be patient and compassionate when she understands the issues.

Permission/Release Form

At the initial visit, each family is required to sign a permission/release form that allows outreach workers to provide services to the child and family. This form allows NGCA to provide transportation to school or doctor's appointments, work with children after school hours, and provide other services they see as critical. NGCA staff are not sure if the release is legally defensible (e.g., in the case that a child was in a car accident while traveling with an outreach worker), but they are certain that it represents parents' support of their children's participation.

Education Activities

One of primary reasons children are referred to School Outreach is for academics, low achievement, and developmental delays. To this end, outreach workers provide a number of services and

activities designed to (1) help children in school, (2) teach parents to help their children, (3) convey the importance of schooling to families, and (4) facilitate communication between the home and school.

The first thing the outreach workers do every day is check the attendance lists at their schools to see if any of their children are absent. If the family has a telephone, they call to find out if the child is sick. If not, they go to the home and bring the children in to school. Over time, they think that their efforts result in better attendance and children arriving at school on time. If the problem persists, and the family is not doing all they can to get the child to the bus, the outreach worker considers making a referral to the Department of Family and Child Services.

Outreach workers routinely meet with teachers to understand the academic needs of the students. They help with assigned homework, provide remedial lessons, and review skills with the children. They create a workbook of phonics and other skill development activities that the children can do at home with the parents. Most parents do not know where to begin in helping their children academically, particularly when they themselves did not do well in or complete school. By working at home with both the child and parent in a one-on-one sustained manner, the outreach worker promotes parent-child interaction, and the parents can see the effect of their own behavior on their child's interest in education. The outreach workers familiarize themselves with each teacher's curriculum requirements so they are not working against the teachers or reteaching the same thing differently. They stress that they are there to supplement, not replace, the teachers.

Outreach workers meet with teachers again at the end of the school year to review each family's progress and problems. They also have frequent meetings with principals to discuss children's needs and explain possible sources of current discipline problems.

One of the biggest problems identified in the project's application was the lack of communication between parents and teachers: "parents would not come in for conferences, would not respond to notes sent home with the children, and would not take part in school activities. When communication did take place, it was often unproductive or hostile." Outreach workers convey the importance of parents communicating with their child's teacher, which not only helps parents understand how their child is doing academically, but also shows the child the importance the parents place on education. The outreach workers facilitate the meetings between teacher and parent, including providing transportation, helping the parent understand that the interaction can be a positive experience (conferences are also held to give

praise to students), sitting in on the conference, and helping the parent understand that the teacher is on the child's side too.

Training Activities

School Outreach workers receive 3 to 5 days of training prior to working in the field. Topics cover every area for which a student might be referred. For example, they are taught how to treat lice, handle food safely, talk to teachers about specific reading problems, and understand stages of child development and identify developmental problems. They conduct role-playing activities on how to handle various situations, such as angry parents or extremely unhygienic homes. Training also includes practice addressing and determining a course of action for actual referrals received in previous years. The project director discusses how Department of Family and Child Services reporting is conducted and under what circumstances NGCA is required to report. Outreach workers receive notebooks with all of the forms, handouts on child development, and phone numbers for referrals to other agencies. Following this training, new outreach workers work alongside veteran workers for about 2 weeks. They have the opportunity to meet the children and families, understand the issues involved, and observe the veteran outreach worker as she does her job. The length of time for the onsite training varies with trainees and their experience. The project director goes on home visits when there has been a complaint about an outreach worker and to spot-check new outreach workers.[3]

The outreach workers are paraprofessionals (professional social workers would generally earn too much for the School Outreach Project) who have experience working with these issues, either as former teachers, home health workers, mental health workers, or other similar areas. In addition to the training prior to handling their own caseloads, all school outreach workers take advantage of any continuing education program offered by community colleges or the county.

Activities Supporting and Strengthening Families

School Outreach workers focus on developing a rapport and trust with families. Without gaining that trust, outreach workers suspect they would not have nearly as much success. The families, they say, really must want to change. Moreover, an outsider coming in to a home and telling parents what they

[3] She spends about 30 percent of her time in the field. She also makes home visits in cases when the Department of Family and Child Services calls with a problem in a focus family, when the parent has a problem with the outreach worker, or when a home situation is so extreme that an outreach worker does not want to go alone.

need to do differently has little chance in making an impact. Part of gaining that trust is involving the whole family. Outreach workers typically help siblings with homework, involve them in games and activities, and provide any other support provided to the referred child. For one family, the outreach worker has taken an infant sibling to the doctor to receive immunizations because the mother does not have transportation while the father is at work. The outreach worker felt that as long as the parents were worrying about the infant's immunizations, they would not be helping with their other child's reading.

Transportation is a big issue in the area. While there is a regional transportation system, it does not have regular daily routes and is not accessible from most homes. Outreach workers can provide transportation to children's doctors appointments, group activities, school functions, and they drive parents to group activities, parent-teacher conferences, and other events.

Outreach workers also organize a number of group activities for children and families. These allow the families to get to know each other, spend some fun time with their children, and have a day they can enjoy themselves. Activities are held once or twice a year, with one always around the beginning of the school year when they also distribute donated school supplies to the children. Typically, these are picnics, with educational games and socialization time. In the summer, the program sponsors field trips to the zoo and aquarium and other activities for children and families, sometimes just a day at the park. Funding is hard to obtain for activities that do not serve a purpose beyond fun and relaxation, and consequently they are not held as often as staff would like.

Partnerships

Project staff indicate that the buy-in of the school systems, principals, and teachers is critical to the functioning of the program. Aside from allocating funds for the program, school personnel are integral to identifying the children and families who need assistance. Obtaining this buy-in is generally not difficult once teachers and principals understand how the program works and how the children benefit. Often teachers who have worked with the program for a number of years advocate among the newer teachers. One of the schools provided the outreach worker her own classroom in the school, until lack of space became an issue, and at least two principals view the outreach worker in their schools as staff members integral to the daily work of the school.

NGCA has a contractual relationship with the Department of Family and Child Services (DFCS). The agreement establishes a reporting mandate whereby outreach workers are required to report certain

home situations to DFCS. These include abuse and neglect, leaving a child home alone without regular child care, extreme lack of hygiene, and other serious problems. Similarly, DFCS provides information about their cases involving School Outreach families. The relationship between NGCA and DFCS (which is associated with removing children from their homes) is not generally discussed with the families. NGCA staff note that if families know about their work with DFCS, it is less likely that they would trust outreach workers, allow them into the homes, or let them work with their children.

Local hospitals and health clinics provide School Outreach with many of the materials used in outreach worker training, such as handouts and information on stages of child development.

NGCA has negotiated with the local Wal-Mart and Kmart stores to help support the families at Christmas. Each year the outreach workers bring all of the children to the store during non-business hours and allow each child to pick $100 worth of merchandise. Parents are required to wait outside while their children make their own selections. As would be expected, most children select toys and games. Project staff feel, and one mother interviewed agreed, that getting something for Christmas like all of their peers is critical to these children's feelings of self-worth and happiness.

Wal-Mart also donates books, returned but unsaleable items, and overstock, such as socks and underwear, diapers, cleaning supplies, soap and shampoo, and other necessities throughout the year. These items are distributed to families as needed. Outreach workers bring them to the home when the children are at school so the children are not aware of these donations.

D. Problems Encountered

Lack of Resources for More Outreach Workers

Each of the outreach workers, NGCA staff, and the school principals indicated that there are far more children who could benefit by school outreach services, but there are not enough resources to support more school outreach workers. Outreach workers generally carry a caseload of 20 focus families, and all of them have referrals that they have not been able to follow up. They fear that with scarce resources, teachers are reluctant to refer all the students who need assistance.

Several outreach workers admitted that it is easy to become too invested in the families and children. One outreach worker commented that they really have to like what they do because the job is "filled with crying and worrying and feeling helpless." In spite of trying to keep an emotional distance from the families, they can never give up on a child, and since it is unlikely that all of the child's needs will be met, their work is never done. It seems likely that the outreach workers' dedication keeps their caseloads large. Program staff have also found that when outreach workers move past a friendly relationship to a friendship with the parent, it becomes harder to work with the family. Parents may lose respect for the outreach worker or start taking advantage of what the program can offer.

Low Pay Scale

The need for more outreach workers is compounded by the relatively low pay for the position. Outreach workers earn $12,000 per year in a county where the median income (1994) is $18,150. They work long hours and weekends and face very stressful, if not dangerous, situations. Mileage reimbursement at $0.25/mile is well below the state rate of $0.31, and in a job requiring a good deal of driving personal vehicles, this creates an additional hardship on outreach workers. One respondent indicated that the project has made a conscious decision to keep salaries low so it can afford more outreach workers—and, in turn, serve more families.

Teacher and Principal Buy-In

The outreach workers have found that while most teachers are entirely supportive of the School Outreach project, some are less receptive. Some teachers and principals new to the schools felt that the outreach workers were telling them that they were not doing their jobs right and that the outreach workers were there to watch over their teaching. Project staff feel these are front-end issues that are easily dealt with at the initial orientation session.

Both Pickens and Cherokee Counties have high teacher turnover. This not only necessitates an in depth orientation for school staff each year, but also harms the continuity of referrals by teachers. A new teacher unfamiliar with the school, the students, and the outreach project system likely would not know the history of students involved and make it a priority to work with the system immediately. Again, the outreach workers contact new teachers as soon as possible to explain the program and how it can help the teacher.

Problems with Home-Based Family Services

School Outreach workers frequently encounter a number of other problems commonly associated with home-based programs. Several outreach workers recounted instances of entering homes plagued by domestic violence, drugs and alcohol, or simply angry and hostile parents. The workers are instructed never to enter a home alone if they are afraid; they can ask the project director to go with them. They can also refuse to enter a home in cases of extreme unhygienic conditions. They are instructed never to use restrooms or to eat or drink in families' homes.

NGCA staff have found that parents frequently lie to the outreach workers. While there is nothing they really can do about it, they have found that the parents' fear of a DFCS referral can be useful in some cases. Outreach workers feel it is important that they have at least one way of convincing families they need to take good care of their children, and they occasionally do this by threatening to refer a family to DFCS, which often results in a child being removed from the home for a short time. Many of the families involved have had some experience with DFCS and its ability to take a child from a home. While they seem reluctant to use it, outreach workers find this to be effective when they are certain a parent is lying or not complying with recommended changes.

Many of the families in the program move around often due to divorce, new jobs, or hiding from an abusive spouse. This transience makes it difficult to work with and monitor a child, especially if the family moves out of the county (even if into another NGCA county). Families rarely leave forwarding information, and if the child's new school does not offer outreach services or make a referral, he or she is lost from the system.

Language Barriers

Cherokee County has a number of recent immigrants who speak only Spanish. Without NGCA staff and outreach workers who speak Spanish, the program has difficulty working with these families. They have found that the children often serve as translators for their parents.

E. Evaluation and Dissemination

Evaluation

Evaluation is not considered a priority by the NGCA staff as they balance limited resources; serving more children is the primary goal. They have seen how difficult it is to show gains and successes on paper and recognize the problem of attribution. Many of the children and families served by the program participate in a number of other assistance programs, including other home-based and intervention projects administered by NGCA. Outreach workers do collect report cards and attendance reports and talk with teachers in an ongoing manner, but they say it is difficult to sort out all of the intervening issues. They keep daily records of the families they visit and services provided, as well as family contact records to track services provided to each individual family over time. However, no systematic analysis has been done with these data.

Outreach workers track children's progress informally as well, particularly for the cases where they provide more intensive services and work frequently with the children over a number of years. Over time they can observe positive effects of the program, but have trouble specifying exactly what the gains are and whether they are measurable.

NGCA would like to do more in terms of evaluation, but recognize that an appropriate evaluation would be very resource-intensive. They would like to establish a control group with matching students from other schools, but it is difficult to gain access to students in nonparticipating schools. Also, the project director would like to do a formal survey of principals and teachers to further understand the impacts they have seen. She also thinks it would be useful for the outreach workers to complete the original Factor Chart for each child annually. This would put the paperwork burden on the outreach workers and not the teachers, and it would allow for some quantitative, even if subjective, analyses of changes over time.

Dissemination

The project is careful <u>not</u> to publicize their efforts because of the nature of the program and families' reluctance to be considered "needy." NGCA discourages articles or newsclips in local newspapers or on local television and radio that directly discusses the School Outreach program. They feel that any publicity risks nonparticipating families perceiving the program as associated with DFCS or

participating families being publicly humiliated. However, NGCA as the broader service agency is made very visible in the community so that families can take advantage of the many services they offer.

An article highlighting the work of School Outreach workers and some of the families benefiting from the program appeared in the Summer/Fall 1995 issue of *Appalachia*, ARC's journal. Project staff were not aware of any inquiries received from other rural communities as a result of the article.

NGCA's executive director spends a fair amount of time talking with local funders, county leaders, and even the governor about this and other NGCA programs, in the hopes of acquiring more funding. Community Action Committees from other areas have visited the program, but staff are not aware of any replication that has been done.

F. Sustainability and Project Expansion

The executive director's attitude toward sustainability is relaxed and confident. He says that as long as there is a need for the program, NGCA will provide for it. Currently, funding is provided by local county boards of education, the state, and local corporate in-kind donations. He does not anticipate that any of them will discontinue funding. He would like to see the program funded through the state education department, but separate from state school funding, similar to funding for classroom aides.

The NGCA staff's basic strategy is to make the agency visible in the communities. The agency keeps the school boards constantly aware of the important services it provides and how the services are important to the entire community, not just those who directly benefit (e.g., board members do not want their children playing with children who have lice). By focusing broadly on NGCA's work, they hope to obtain funding that can support School Outreach and other NGCA programs.

G. Accomplishments and Outcomes

The intended outcome of the project, as stated in the application, is "that the 'at-risk' student, with increased parental support and school involvement, will improve in [his or her] school performance, self-confidence, and social relations, and will develop a stronger interest in learning and personal accomplishment." In the longer term, project staff hope that the "intensive family support in the early

primary school years can help establish lasting patterns of parental support of learning and sustained success for the students, leading to high school completion."

For the children and families served by School Outreach, the project has met its short-term goal of improving school performance, self-confidence, social skills, and interest in learning.[4] The project director estimated that the program is currently serving 125 children, 75 of whom are in their first year of intensive services. It is clear from talking with outreach workers that the children and families all benefit in some way. One principal noted that they might not ever really see the difference they make, but they have to believe that they will. Similarly, the NGCA executive director noted that the results of the intercessions may not show until the children are in high school, but that they must still work with primary grade students in order for the results to appear later.

Another principal indicated that there were fewer discipline problems as a result of the project's work with academic and social/emotional issues. She commented that many of the children served by the project are angry at their families, at their economic circumstances, at the fact that they did not get a Christmas present, because they do not have a warm enough jacket, or because they do not have someone to count on. The anger results in discipline problems at school. But by having one person who consistently spends one-on-one time with the child, the student is able to dispel some of the anger and work on academics at the same time.

In many cases, the outcomes of the program may be in students' attitudes, which are not easily quantified. But principals, teachers, and outreach workers agree that many students appear more eager to come to school and learn than prior to their participation. Both principals interviewed acknowledged that the outreach workers have been critical in increasing attendance. Aside from transporting students to school, the outreach workers have made students want to go to school (or let them know that they do not have a choice).

In addition, their work has resulted in better parent-teacher relations. Parents seem more willing and less fearful of coming to teacher conferences. PTA meeting attendance is also up in at least one of the schools visited. Evidence of parents' beliefs in the program's success is also seen in the fact that families have asked to have their children referred to an outreach worker. While few outside of those

---

[4] The long-term goal of reducing dropouts cannot be examined until the children are in high school. The first cohort served under the ARC grant is just entering high school.

already participating know about the program, those that do have seen the benefits for siblings and relatives and have asked to have other children participate.

H. Lessons Learned by the Project and Recommendations for Other Communities

In order to successfully run an outreach program, the administering organization should either be a multi-resource agency itself or have knowledge of and access to services provided by other agencies in the community. That is, staff must have access to all community resources, such as literacy services, community services block grant funding, energy assistance, transportation assistance, food assistance, and other resources to meet families' multiple needs. Staff should know about other agencies' resources and be able to direct families to them. For example, they should know that a certain church has a food bank or that another one provides heating bill assistance. They should be able to locate resources and services and help the families access them.

The schools' buy-in to the program is critical. Teachers are be responsible for making the referrals to outreach workers. Explaining the program to teachers and principals is an important first step to getting their buy-in. After the program is up and running, continual interaction between outreach workers and the school is important to keeping the program going. For example, referrals by teachers must be followed up by outreach workers or teachers will not continue to make them.

Hiring the right outreach workers is critical. An outreach program requires dedicated staff who are willing to put in long days and who are unafraid of going into unknown situations. Moreover, they should come from within the community; this gives them a foot in the door, something for families to relate to, and someone the families can trust. It creates an understanding that the outreach worker is not just there feeling sorry for the family. An outreach worker must be genuinely interested in the children's welfare because children can see through false caring. School Outreach has had one male outreach worker over time, and while they cannot discourage men from applying, they feel that women are generally better suited to the job. The outreach workers mostly interact with the mothers, and husbands might feel threatened if another man is working in the home twice a week. Also, the outreach workers often work with children alone, and this is often perceived to be inappropriate when the outreach worker is a male. The program must have good supervisors who lead by example and who have done and are willing to do the outreach work themselves.

The referral structure must be flexible system. It must take the minimum amount of time and effort to gather the maximum amount of information about the child. The School Outreach program was able to reorganize its referral system when it was not working for them. Referrals must be simple for teachers to complete, and verbal referrals should be allowed if that is what teachers want to provide. The referral system is not designed to limit referrals but, rather, to locate the children most in need. If the system is so complex that teachers are not willing to navigate through it, then the children cannot be served by the program.

The outreach program must be seen as an independent organization. In order to keep the trust and confidence of its beneficiaries, the program must be seen as entirely separate from families' perceived stigma of the Department of Family and Child Services. Program staff should identify with the broader agency (NGCA) and not School Outreach itself. Similarly, the program should be seen as separate from the schools themselves, and not another extension of an institution many families already fear.

However, outreach workers must work directly with teachers to best serve the children. They should familiarize themselves with each teacher's curriculum requirements so they are not working against the teachers or reteaching the same thing differently. They stress that they are there to supplement, not replace, the teachers.

The program must work with the entire family. The executive director cautioned that unless an outreach program involves the whole family in the intercession, it is unlikely to be successful. Merely providing short-term services to one child is not enough to change any family functioning, particularly parental academic encouragement.

I. Summary and Conclusions

School Outreach is a viable project that would likely be useful in most rural—and urban—regions around the country. (The project even serves some middle income children whose parents are not as interested in education and school involvement as they might be.) A case study of the implementation of the project cannot adequately describe the circumstances in which the outreach workers are working. While outcomes have not been systematically documented, the outreach workers' intense desire to serve the families (and inability to give up helping children as they get older) is testimony of their belief in how

much they are improving the futures of these children and families. Future funding is not secure, but the dedicated staff are strident in ensuring that the project continues to serve the families in the region.

The Outreach Program might benefit from better tracking of children during service delivery and over time. By tracking in a consistent manner the services provided to each child and family, the program would be able to identify how those services have changed. In this way, they can better understand how the problems have lessened or changed, and the outcomes for children could be conveyed to potential funders. While attribution will still be a problem, a qualitative review of service changes should still be helpful. By seeing ongoing evaluation as a part of sustainability, the project may be in a better position to attract funding—and then benefit more families.

The Science Center of West Virginia

Project Location	Bluefield, West Virginia
Grant Recipient	Alliance for the Arts, Ltd.
ARC Number	WV-11511-94-1
ARC Project Type	Mathematics and Science
Grant Amount	$150,000
Matching Funding	$202,000
Dates of Site Visit	April 4-5, 2000
Site Visitors	Nicole Bartfai and Glenn Nyre

Project Abstract

The Science Center of West Virginia is a hands-on science museum serving students and adults in several counties of southern West Virginia and southwestern Virginia. The purpose of the ARC grant was to improve the quality of mathematics and science education in the area by helping the new Center become more fully established. Funds were used to purchase 23 new exhibits for the gallery. These included a *Bone Zone*, which contains the skeletal remains from a variety of species, and the popular *City Grocery*, within which students learn a variety of skills as they walk the aisles and "shop" for items. A van is used to transport a portable planetarium to schools. The grant also enabled the Science Center to hire two full-time-equivalent staff.

The most frequent visitors to the Center are elementary and middle school students. These students are provided the opportunity to discover exhibits on their own and can view a presentation that is geared toward the current classroom curriculum. The Center has established a good working relationship with the local school district and they work in collaboration to encourage teachers to bring students to the Science Center.

The Science Center has grown in size and greatly expanded its services, programs, and local influence over the years. The surrounding communities and their schools have been positively impacted by the Science Center and will help to celebrate its sixth anniversary in July 2000.

BEST COPY AVAILABLE

129

The Science Center of West Virginia
Alliance for the Arts, Ltd.

A. Background

Community Characteristics

The Science Center of West Virginia is located in the town of Bluefield, in Mercer County, 10-minutes from the Virginia border. According to 1999 U.S. census estimates, Mercer County's population was 64,132, down from 73,942 in 1980, and the majority of residents (93 percent) were white. From 1980 to 1990, Mercer County experienced a 12 percent decrease in population, while Bluefield itself had a 21 percent decrease. Neighboring Tazwell County (Virginia) also experienced a decrease in population from 50,420 to 47,400 during the period from 1980 to 1995. Residents have been forced to relocate to find employment due to the decline in the local economy, which can be somewhat attributed to the closing of the coal mines. Based upon 1996 census estimates, other economic indicators in Mercer County Virginia include:

- A median household income of $25,046;
- 22 percent live in poverty among people of all ages; and
- 34.8 percent live in poverty among children under age 18.

In addition, according to the coordinator of elementary education for Mercer County, nearly all elementary school children in the county (97 percent) are eligible for free lunches under Title I of the Elementary and Secondary Education Act. Neighboring Tazwell County has similar indicators. The current director of the Science Center reported that statewide, only 15 percent of adults hold a bachelor's degree and 3 percent hold an associate's degree.

Characteristics of Grant Recipient Organization

The Alliance for the Arts, Ltd., was organized in 1982 as a nonprofit, volunteer cultural organization. Its initial activity was the formation of a community theatre, the Summit Theatre; the Alliance later expanded its scope to include the establishment of the Science Center. The Alliance has received several grants over the years, which have greatly increased the amount of science and cultural

activity available to youth and adults alike in this small rural community. In addition to private giving from individuals and in-kind products and services from some local businesses over the years, formal grants have been received from local sources such as the Bluefield Area Foundation, which provides annual grants in support of education, and the Shott Foundation, which has provided funds for student tickets to the Center, as well as the Pittsburgh-based Benedum Foundation, which includes education funding for West Virginia among its priorities, and the Boeing Foundation, which has provided bus transportation for school youth.

Overall, some $2.5 million has been raised in the last 12 years for the Summit Theatre, the Science Center, and the building in which they are located. This includes a recent $1 million grant from the State Building Authority, supplemented by county funds, which supported further renovations to the building and $250,000 specifically for the Science Center, most of which was targeted toward purchasing new exhibits and equipment. The Center continues to explore creative financing for its operations and recently joined with the area's Civil Air Patrol to request the donation of computers from the U.S. National Security Agency.

B. Project Overview

Problems/Disparities the Project Was Designed to Address

At its inception, the Science Center of Center of West Virginia was the only facility in this area of the state that offered hands-on science education opportunities. Sunrise Science Hall, located in the state capital of Charleston, also began offering some informal science education opportunities along with its original art program focus about that time, but that facility is located some two hours north of Bluefield—and largely out of reach of many of the area's schools in terms of both travel time and expense. Sunrise is also a more static viewing environment, with few interactive opportunities for visitors.[1]

Another problem facing the region was a lack of resources and equipment in all schools to adequately provide students with the 50 percent level of hands-on instructional time required by the state's 1993 science standards. At the time the ARC grant proposal was submitted, Mercer County and its

[1] The Science Hall has now become part of a larger planning effort in Charleston, the Clay Center for the Arts and Sciences, which will eventually include an art museum and a performing arts center, including a concert hall. Current plans are that the renamed Greater Kanawha Valley Foundation Science Center will occupy two floors of the complex and connect to a planetarium. Still, distance/access to this site remains a problem for youth in the southern portion of the state.

neighboring counties had limited science resources available. The elementary education coordinator for the county indicates that this is still an issue, but the situation has improved somewhat at the middle and high school levels. Mercer County has begun to consolidate its schools over the past few years due to enrollment decreases and there has been an increase in laboratory facilities and equipment at the secondary schools as a result. The elementary schools however, have not experienced any real change in this regard. For example, with school funding being allocated on a per-student basis, some of the smaller schools, which have as few as 90 students, do not have excess funds to spend on science equipment. Recognizing the dual necessities of increasing students' accessibility to informal science education and increasing science resource availability to schools in the region, the founder/president of the Science Center, who then was also president of the Alliance, began raising money to create hands-on exhibits and an active outreach program.

The purpose of the Center was not only to create access to science education resources, but also to enhance student interest in mathematics and science. It was felt that as students became more engaged in the learning of mathematics and science, their interest in taking more complete sequences of mathematics and science courses and exploring careers requiring skills in these areas would concomitantly increase. The director of the Science Center indicated that the Center is an important mechanism for exposing youth to science, mathematics and technology careers, especially in a depressed area in which there are few science or technology employers or role models to which youth can look for inspiration in these fields.

Approach

The Science Center of West Virginia provides a comprehensive approach to hands-on activities in science, math, and technology to students in the area. The Science Center operates a gallery where visitors can interact with science, math and technology exhibits. Using the van purchased through the ARC grant, the Center also provides in-school presentations with the StarLab. The StarLab is a portable planetarium where up to 30 students can enjoy the night sky right in their own school. Another component of the Science Center is that manipulatives are available for teachers to use in the classroom upon request.

The Science Center also provides services to the entire community. Over the past couple of years, the Center has increased its membership, and the director and president continue work in the community to disseminate information about the Center. With a new director on board, the Center has

refocused attention on creating interactive exhibits for the students and on continuing these plans in the future.

Status at the Time of the Site Visit

The Science Center was fully operational at the time of the site visit, and preparations are underway to celebrate the Center's sixth anniversary in July 2000. Although the area continues to struggle economically, the founder/president and the current director have been very successful in seizing opportunities, leveraging resources, and engaging the interest and involvement of a broad spectrum of the local community and surrounding area.

Science Center staffing at present includes the founder/president, who heads fundraising activities and engages volunteers in the Center's efforts (and who has always been a volunteer); the current Center director, who replaced the first director in October 1997; an administrative assistant/office manager; and two people who work in the exhibit area assisting visitors. A part-time custodian and a part-time woodworker, who helps build exhibits, cabinets, and other necessary facility structures in order to save purchasing costs, supplement their efforts. Some former staff are used on an as-needed basis to cover absences and large events, as are community volunteers. Given the current and planned growth in the number of Science Center services and activities, a full-time science educator is needed to take some of the day-to-day burden from the director, so he can devote more time to administrative functions and working more closely with the schools to develop additional exhibits and other learning materials.

Unfortunately, the site visitors were unable to view students at the museum, since groups that had been scheduled to visit during the time we were there had rescheduled in order to attend a special event the previous week. However, the director provided us with a detailed tour of the Science Center and both explained and demonstrated various exhibits. Those responsible for Center operations have made a decision to focus their efforts on either buying exhibits or constructing them in-house, rather than renting them from companies or professional associations.

C. Activities Undertaken as Part of the ARC Project

The Science Center provides a multifaceted approach to science education by providing a gallery with hands-on exhibits, school-site education with the StarLab, and science manipulatives that teachers

can use in their own classrooms. The gallery is located on the third floor of the old City Hall building, now called the Center for Arts and Sciences. Admission is $5 per person. This is an increase from $3 2 years ago, although groups of more than 20 are charged only $4 per person. Exhibits cover several content areas including earth science, physical science, mathematics, chemistry, and technology. Many of the exhibits provide students with opportunities to conduct hands-on experiments. For example, one of the exhibits demonstrates the theory of gravity and another the components of electricity. Most students come to the Science Center during school/class field trips. Frequently, especially at the elementary level, their teachers do not have extensive training in science, mathematics, and technology. The teachers therefore often rely on Science Center staff to interpret the exhibits and help students explore them. Visits require the supervision of one adult for every seven children. This necessitates the involvement of parents and other community members who participate in the school visits and thus become exposed to the Science Center themselves.

A typical class/school visit lasts between 2 and 2½ hours, including an introduction to the facility and its exhibits, a period of guided free time for exploration, and one or two demonstrations. Science Center staff work with teachers to coordinate demonstrations so they complement current class content. Often, a teacher will call Center staff ahead of time to ask if certain exhibits or demonstrations are available that relate to topics that the students are studying in class. If not, the Center director frequently tries to find the time and materials to construct small-scale experiments/exhibits and obtain other types of resource materials that can be used for this purpose. He currently has a battery of materials upon which he can rely to meet many of the requests he anticipates.

Start-Up Activities

The early development of and fundraising for the Science Center by the Alliance for the Arts began in May of 1992, and in early 1993 it began educational programming primarily as an outreach program, with staff going to area schools with the StarLab. There was not much of a physical presence at that time, as basic renovations were being made to the building in which it would be housed, so the exhibit gallery was not yet open. Nearly $500,000 had been raised and pledged for the facility, the majority of which was for capital expenditures, and the majority of that for exhibits. The ARC funding was considered critical to ensure the viability of the Science Center, with the publicity generated by it sending a message of federal support for the effort to those individuals and organizations from whom matching and additional funds were being solicited.

Exhibits

The ARC grant enabled the Center to hire two full-time staff and purchase and fabricate 23 interactive exhibits, several of which are still being used. These include a *Bone Zone*, which contains the skeletal remains from a variety of species, and the popular *City Grocery*, within which students learn a variety of skills as they walk the aisles and "shop" for items. They can consult a food pyramid chart to help them make healthy selections, read recipes to help them decide what ingredients they need to purchase, and pay the final bill and count the change they receive from the cashier. Other exhibits demonstrate the theory of gravity and the components of electricity. Some of the exhibits were pre-assembled displays and others were developed and assembled by the previous director and staff at the Science Center. The grocery store and several special exhibits are housed in the jail cells area of the Old City Hall.

Visits to Schools

The Science Center also supports StarLab, a portable, inflatable planetarium that brings the night sky indoors. Science Center staff drive to the many remote schools in the region and provide astronomy lessons. StarLab can accommodate 30 students and fit in a space of 25 feet, with light fixtures no lower than 13 feet. Reservations must be made 2 weeks in advance, and the cost for this outreach activity is only $130 for one or two programs. A total of four programs have been created, each lasting approximately 30-40 minutes. The two most popular among them are *The Stars Tonight*, which blends mythology and science to explore the planets, stars, and constellations, and *Planet Quest*, which illustrates the solar system. In addition to its mobile visits to schools, the StarLab is also used within the Science Center itself. Groups of students can therefore enjoy the "night skies" during their visits to the Science Center, if arrangements are made ahead of time. This is less costly ($30 per program), but is not always as convenient for schools.

Prior to the ARC grant, the Science Center had to borrow vans from individuals in the community for this purpose, which significantly limited the distance the StarLab could travel and reduced the flexibility of its use. Once a van was purchased with ARC funds, the number of students who benefited from the StarLab increased greatly.

Another form of outreach to the schools is through the use of science kits focusing on specific scientific concepts and phenomena that the Science Center director develops with input from, and sometimes the assistance of, area teachers. These kits are loaned to the schools, and can be distributed through use of county vehicles, commonly referred to as the "Mercer County Pony Express." The kits provide additional equipment and materials that are not available in most schools and help teachers adhere to the state's hands-on experience requirement for science instruction. The Science Center director stays abreast of changes in the state's science standards, frameworks, and the learning outcomes that are set for elementary students, especially, to ensure that the materials and approaches he develops support them.

Summer Day Camps

A series of four 1-week Summer Day Camps is yet another activity of the Science Center. Instituted 2 years ago for youth ages 12 and up, they operate from 8 a.m. to 3 p.m. every day, with a new topic each week. This summer's topics are *birds*, including banding birds with a nationally prominent birder; *rocketry*; *astronomy*; and *radio astronomy*. The latter three take advantage of the relationships the Center has built with NASA (detailed later) and include an outdoor observation on one evening and a 2-day visit to the world's largest fully steerable telescope. The cost for participation in the Day Camps is $80 per week, with a capacity of 15 youth. This allows the Science Center to break even on the costs associated with operating them.

Ties to Local Schools

The Science Center has established a good collaborative relationship with surrounding communities, schools, and other entities. In addition to traditional public school youth, other visitors include students from religious schools, students being home-schooled, and members of organizations such as Boy Scouts and Girl Scouts. Perhaps the closest connection the Center has is with the Mercer County schools. Each year the county pre-purchases tickets for entrance into the gallery, this year buying 3,000 tickets, which represented an increase from the previous year. The district plans to provide additional funding for transportation in subsequent years. Unfortunately, teachers are limited to two extracurricular field trips during a school year, and given other options for other purposes, many teachers only bring their classes to the Center on one occasion during the year.

Another way in which the Science Center works with teachers is through professional development workshops. In addition to those provided by NASA personnel, the Science Center also sponsors workshops for interested teachers, and the director reported that they have been well attended and well received. These sessions are especially important for elementary teachers, since they rarely have received much exposure to mathematics and science in their teaching preparatory programs.

Other Center Activities

Special activities are also held at and sponsored through the Science Center, such as four membership nights per year, which range in attendance from 150-300, depending upon the focus of the event. The focal point of these events range from new exhibits at the Center to guest speakers. The most recent membership night focused on a new computer designed to accommodate quadriplegic visitors. The members were invited to learn and test the new computer. As a special event for students, last year as part of National Engineers Week, the Center sponsored an "egg-dropping contest" in which competing students from many surrounding counties packaged eggs in unique ways in hope of having them survive a three-story drop from the top floor of the Science Center.

Special events draw large numbers of adults to the Center in addition to youth, and membership is growing. The Center has a membership of some 500 people, which includes free admission for a year, with annual membership categories including individual ($35), family ($60), supporter ($100+) and benefactor ($1,000+).

In addition to its regular exhibit, classroom and office space, the Center also operates the Moon Rock Café and a museum store that sells a wide variety of science-related manipulatives and other associated objects, including popular items such as space exploration, nature, and other science posters and a variety of Center tee shirts. Both of these units are currently operating at a break-even level.

Other activities funded by the ARC grant included promotional activities, such as the development and distribution of brochures, and an increase in media advertising.

Partnerships

Strong partnerships have been forged with the local schools, area colleges, and business and volunteer groups, and special relationships have been developed with entities such as the Civil Air Patrol and NASA.

NASA involvement in the Science Center. The Science Center has developed a very close and enviable relationship with NASA, especially Langley Research Center in Hampton, Virginia, over the past two years. Serendipitously beginning through an informal conversation between the current director and a NASA employee who was visiting someone in the area, the latter asked if might be useful for him to give a talk at the Center while he was in town. This relationship has been nurtured to a level at which NASA personnel and exhibit materials make routine visits to the Science Center to provide professional development workshops to area teachers and informal science education opportunities to students and other area residents. These have included a recent week-long exhibit, with activities built around moon rocks, a $240 million lunar materials disk (soil and mineral samples), and a rocket that NASA transported to the site for display. The NASA contingent returned in May 2000 for additional events and is scheduled again for late September.

The Center director has also established an institutional relationship with Project LOEB, which is an initiative sponsored by NASA and National Oceanic & Atmospheric Administration (NOAA). This project facilitates an exchange of weather information between schools, wherein students measure elements such as air temperature, rainfall, etc., according to pre-established protocols on a daily basis and send them to a central databank. Begun as a U.S. initiative by Vice President Gore, the project is now international. Although the Science Center cannot participate as an official site because it has no students of its own, the director is currently loaning equipment to schools that wish to participate and is planning to offer LOEB protocol training to teachers.

Higher education involvement. The Science Center has made some progress in involving local colleges in its activities. These include Bluefield State College, classified as a historically black institution, and its branch campus, Greenbrier Community College Center, as well as Concord College, located in nearby Athens, which is part of West Virginia's state college system. Concord College has begun using the Science Center's facilities to supplement its mathematics and science teacher preparation program, one of the most popular degree programs at the college. It is anticipated that the Blue Ice Foundation, which sponsors learning activities dealing with Antarctica through an interactive, educational

web site for students and teachers, will soon sponsor a technology hub to be housed either at the State College or at the Science Center. Either way, the two institutions will cooperate in its operation.

D. Problems Encountered

Staff Turnover

One of the recurring difficulties facing the Center is staff turnover. Given its limited budget, the salary for part-time employees is just above minimum wage and staff frequently leaving after finding higher paying jobs. For example, the office manager submitted her resignation on the first morning of the site visit, having been offered a more lucrative position.

Although it is helpful that the city of Bluefield provides in-kind payroll services for the Center, it then requires that anyone working 20 or more hours must be included in a retirement program. This policy limits part-time employees to 19 hours and precludes the hiring of more full-time staff, since the Science Center does not have funds to support a retirement program for junior staff.

Operational and Maintenance Costs

The Science Center is a nonprofit organization operating independently under the umbrella of the Alliance for the Arts. It continually struggles to obtain the amount of money necessary to operate an 11,500 square foot, high-maintenance facility that experiences a lot of traffic and heavy use of its exhibits by youth. The director indicated that the Center broke even during fiscal year 1999, largely due to fundraising efforts that brought in approximately one-third of the needed revenue. The current $5 admission rate is estimated to provide about half of the actual costs associated with a visit. Science Center staff continually work to update and change the gallery to provide new and exciting exhibits, but these cost money. As mentioned previously, one way the Science Center has found to alleviate some the costs associated with exhibits is by making many of them in-house, with the help of a local carpenter. This requires a great deal of time, creativity, and dedication, but certainly reduces the costs associated with obtaining and maintaining exhibits.

139

Lack of Financial Resources in the Community

Bluefield and most of the surrounding area have been experiencing a population loss as a direct result of a serious, long-term decline in the economy. Some local industries have closed their doors, and companies outside of the area have purchased others. The founder/president of the Science Center commented, "The money we raised five and six years ago is no longer on the streets." A few examples highlight this fact: the type of mom-and-pop stores (e.g., drug stores, hardware stores and book stores), that would have typically supported an enterprise such as the Science Center—for both civic reasons and because their extended families are integral parts of the schools—have been replaced by large retail chains located in the mall outside of town; the local wood pulp business is now owned by a company in Germany; the telephone company is owned by a firm in New Jersey; the electric company is owned by a company in a neighboring state; the newspaper and television station are owned out of state; and the locally owned Pepsi Cola bottling and distribution plant, which could always be relied upon to provide beverages at special events has been sold.

This situation severely limits the amount of money that is being recirculated back into the community for many purposes and has impacted not only on the Science Center's larger fundraising efforts, but even the small donations it used to be able to obtain from local merchants in terms of services and supplies. Operational funds are the most critical financial need of the Center at the present time, but as every experienced fundraiser knows, it is easier to raise money for brick and mortar purposes, or in this instance, for highly visible exhibits, than it is for day-to-day operations and maintenance.

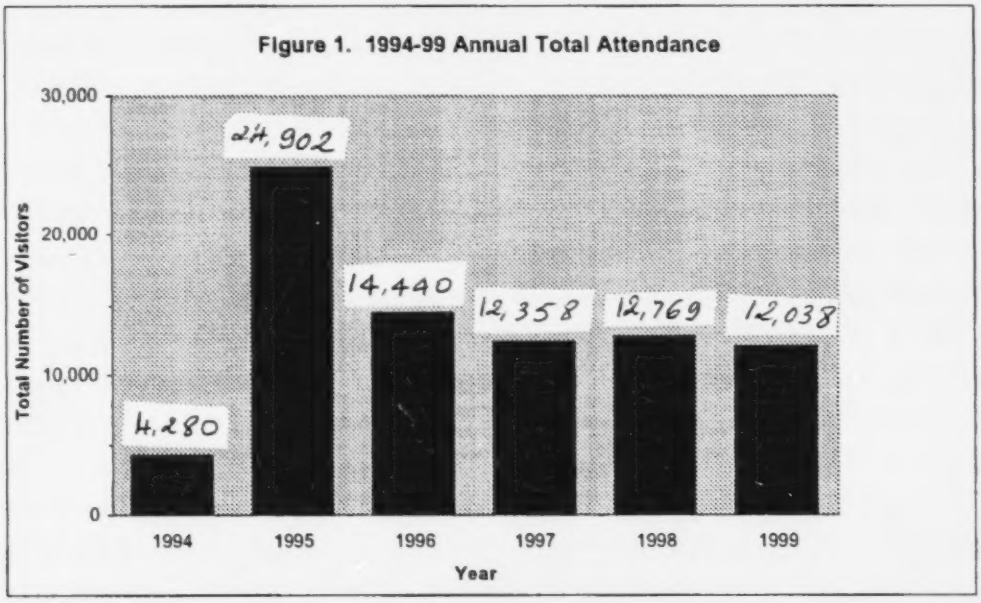
"Ownership" of the Science Center

Although the Science Center has hosted schools groups from 22 West Virginia and Virginia counties, there is a lingering notion among many that this is a "Mercer County facility." It is often only the special, blockbuster exhibits that draw those from more distant counties, and therefore the regular services of the Center are used to the extent initially envisioned. Fundraising beyond the immediate area is also hampered by this perception. Increased outreach will be possible if an additional science professional is added to the staff, then that person and the director can make more direct marketing efforts to the surrounding counties and schools to show them what types of services and activities are available and to demonstrate how informal science education can help teachers meet their educational objectives.

E. Evaluation and Dissemination

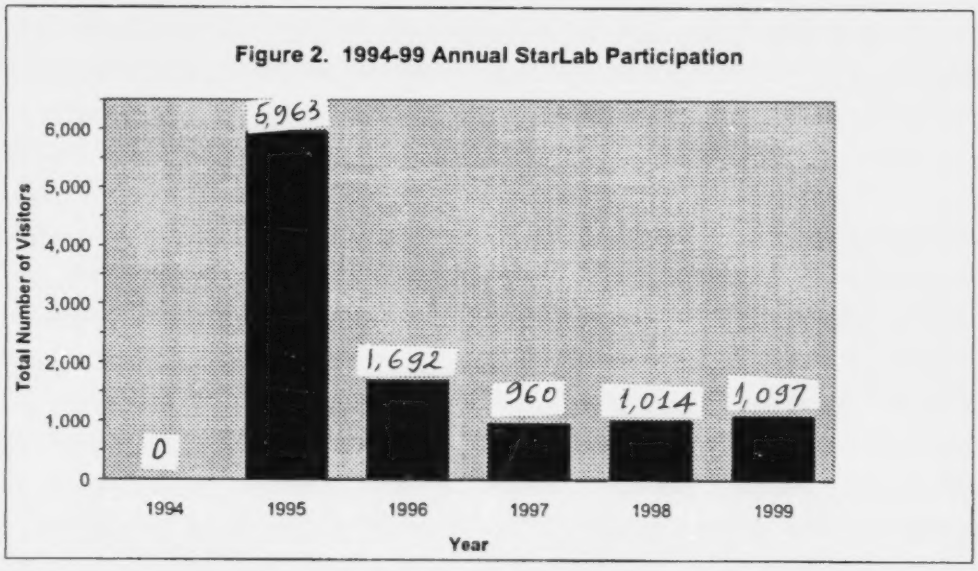
Evaluation

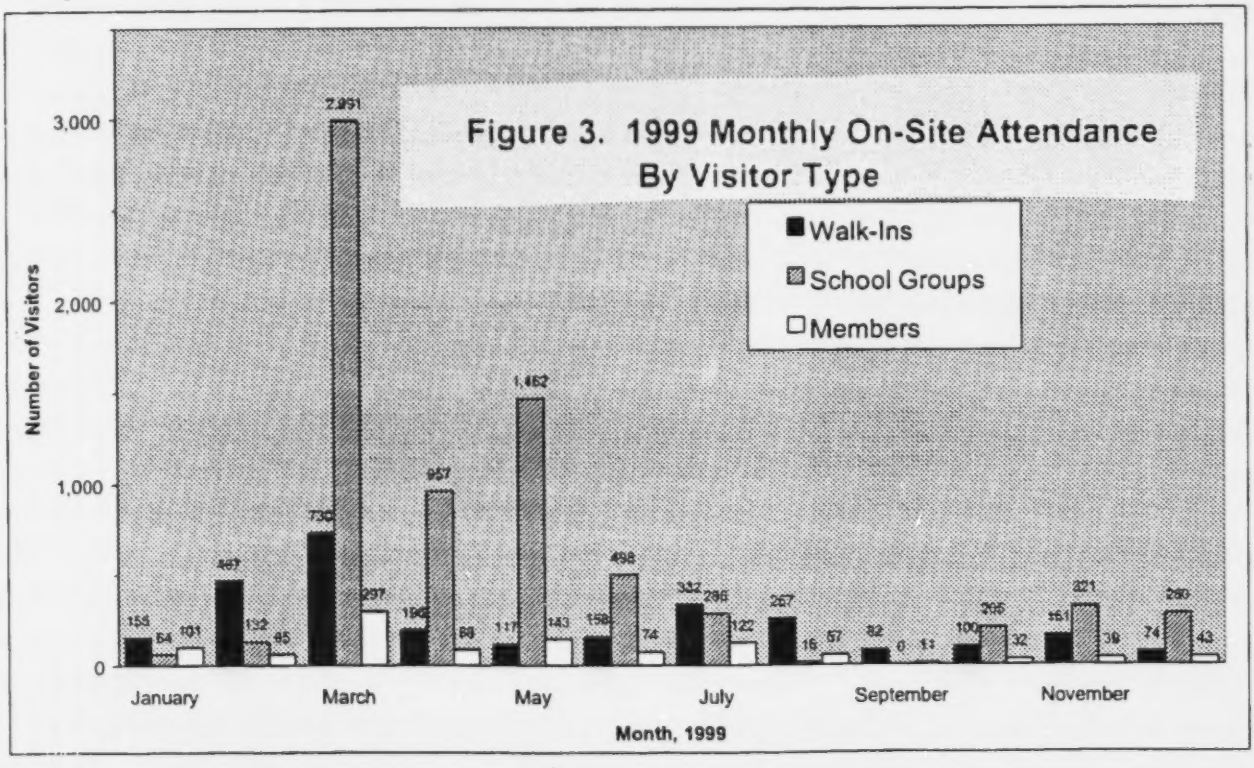
Since the Science Center opened in 1994, it has recorded attendance at both the gallery and in the use of the StarLab. In its first full year of operation, 24,902 people visited the hands-on museum. These numbers have leveled off to approximately 13,000 attendees over each of the next four years (see Figure 1). The StarLab also served a large number of students at school sites during the first year (5,963). This has leveled off to average approximately 1,000 students in each of the past three years (see Figure 2).



Since 1998, when the new director was hired, Science Center staff has monitored the number of school groups, walk-ins, and members using its services, broken down by onsite and offsite use, as well as by month. Visitation is low at the start of school and during the winter months, but it surges toward the end of the school year. This is because some teachers use the visit as a "reward" for their students at the end of the year, rather than as an instructional enhancement to complement their curriculum during the year. The Center director is working with teachers to encourage the latter. Other heightened visitations accompany special exhibits, such as the recent moon rocks and NASA rocket exhibits. (See Figure 3 for a detail of visitor breakdowns for 1999.)

BEST COPY AVAILABLE





142

BEST COPY AVAILABLE

A suggestion box located in the Center exhibit area serves to inform staff regarding what exhibits parents and students find the most useful. Another way staff determine if displays are engaging students and facilitating learning is by observing students in the gallery. Informal teacher feedback is also solicited both during school visits to the Center and during the director's visits to schools. This information is extremely helpful to the director as he develops new learning materials and laboratory kits, works to fine-tune current exhibits, and creates and purchases new exhibits.

Dissemination

Brochures and flyers detailing the types of activities and services the Science Center can provide are sent to schools and community groups. These approaches are also used to inform these audiences, as well as the community at large, about new exhibits and special events. Another venue used to gain exposure for the Science Center is the local media. Newspaper coverage has been very good, especially regarding special events, and the Science Center director assisted the local Public Broadcasting Station in its coverage of the recent lunar eclipse. In addition, images of the director demonstrating exhibits are part of a public service announcement introducing a regular "what is going on in the area" segment on local television. Dissemination on a broader scale beyond the immediate regions has not been a priority in the past, given budget and time limitations, but staff intend to more formally disseminate information regarding the impact of the Center and the StarLab on the community and its schools to a broader audience in the future.

F. Sustainability and Project Expansion

Sustainability

Although it has been, and continues to be, a challenge, the Science Center has leveraged the ARC grant to obtain visibility and additional funding. As a result, it has not only sustained operations but also expanded them considerably. Plans for sustainability include obtaining additional contributions from the community.

In the six years since receiving its ARC grant, the Alliance for the Arts has continued its efforts in support of the Science Center, which has become an independently operating unit under the aegis of the Alliance. The facilities have been renovated, the gallery/exhibit area has expanded, and relationships have been developed with a number of organizations, all of which have enabled the Science Center to

grow and to continue providing informal science education opportunities to the surrounding area. Money generated from admission is not sufficient to sustain the Center, but increasing admission cost is not a viable option. Current plans include a fundraising effort in the community. Also, no plans exist to seek funding through grants.

Project Expansion

Discussions have been initiated concerning the possibility of expanding square footage in the current facility or elsewhere, and/or creating small branch centers out in some of the more distant counties. Although the idea of having branches was raised as a possibility in the ARC proposal, this option has not been feasible until recently, since the operation has now reached a size and stability that those involved are now able to reconsider initiating such an effort.

G. Accomplishments and Outcomes

Evidence of the impact of the Science Center on student learning outcomes has not been determined. The first state science test will not be administered until 2001, thus precluding any tracking of changes in standardized test scores until well after that date. Other potential impacts, such as an increase in the complement of high school mathematics and science courses taken, would have to be tracked on a school-by-school basis, with too many external variables to trace changes to the Science Center.

What currently exists are anecdotal reports of student enthusiasm while at the Center and increases in their interest in mathematics and science upon returning to the classroom. Parents report that their visits to the Science Center have been motivated by their children's positive experiences there, and both staff and volunteers report that their interest in becoming involved was spurred by their children. Mercer County's elementary school coordinator commented on the interest and involvement of teachers in her schools, stating that "[visiting the Science Center] requires a lot of work for the teachers. Why would they continue to come if it was not working?"

Chamber of Commerce staff report that the facility has presented them with an excellent selling point for the community, and the recent increase in membership at all giving levels attests to the community's pride in and support of the services the Center is providing to youth and adults alike. As

one community member said, "How often do people in a town of this size anywhere in the country get to see moon rocks and rocket ships up close and personal?"

Clearly, there now exists in this rural area a structure, a facility, and a resource that would not have come into existence so rapidly and grown and engendered so much moral and financial support without the impetus provided by the ARC grant and supplemented by the dedication and hard work of the founder/president, the Center director and staff, and the Alliance for the Arts board. This is even the more remarkable given the distressed economic environment of the area, a condition which may have otherwise doomed, or at best severely restricted, such efforts elsewhere.

H. Lessons Learned by the Project and Recommendations for Other Communities

Involve the community and be involved in the community. Community involvement is a two-way street, with many intersecting angles. The community has been there for the Science Center from the very beginning, and its involvement was crucial in its establishment and continues to be critical to its continuing operations. At the same time, the Center has not disappointed the community in providing a good return on its investment. When the founder/president of the Alliance began to raise money for what eventually became the Science Center, she originally envisioned a children's museum. However, that idea evolved into the concept of a Science Center as she visited both types of facilities throughout the United States to get ideas. Her dedication and perseverance continues to be a mainstay for what exists today.

Involvement in the community is an equally important element of working to increase students' interest and involvement in science and mathematics. The Science Center found that working collaboratively with schools, colleges, business and, other local entities was important to their continued success. "Small communities tend to rely on each other", therefore, it was important to make sure that all were included. All parties "need to work together to make it work." Otherwise, opportunities for the students will not be maximized. The Science Center has been very successful in increasing community involvement, as demonstrated in its increase in membership over the past couple of years. The founder/president of the Center attributes this increase largely to the hard and effective work of the current director: "You need a dynamic director who can engage the children, their teachers, their parents, and the community."

Establish clear and realistic goals. The director of the Science Center indicated that although it might appear easier to meander through projects such as this without clearly set goals, the difficult upfront work of establishing them actually simplifies both short-term and long-range decisions facing nonprofit agencies. His primary goal is to ensure that the infrastructure is in place from which to provide the facility's services. This condition was not always stable in the early days of the Center, since after its first year of operation, the exhibit gallery was closed for a three months while areas of the building were being renovated. Office and classroom space was hampered as well, and this added to the already difficult task of running a Science Center. Now, the Science Center is contemplating whether or not it should expand or create branches, as discussed previously. Part of the success of the Science Center has been its tendency to "grow slowly and deliberately," and both the director and founder/president tend to believe that their energies will be better spent concentrating on improving what currently exists rather than spreading their resources too thinly.

I. Summary and Conclusions

The Alliance for the Arts demonstrated excellent stewardship in its use of the ARC grant to help create the West Virginia Science Center, and the Center itself can certainly be judged a success in terms of its current array of services, its stability, and its sustainability. The renovated Old City Hall, which is now the Center for Arts and Sciences, is a centerpiece of the community and a great source of pride. Plans for an expansion of activities and services to the area's schools and the surrounding communities reflect the enthusiasm of the Center staff, the Alliance and other supporters, but are tempered by the need for slow growth in a time of economic challenge for the town of Bluefield, Mercer County, and the surrounding area.

Science and Math To Go!

Project Location	Clemson, South Carolina
Grant Recipient	Clemson University for Anderson Oconee Pickens Hub
ARC Number	SC-12415-I, SC-12415-C1
ARC Project Type	Math/Science Education
Grant Amount	$156,000, $50,000
Matching Funding	$172,090, $97,665
Dates of Site Visit	April 27-28, 2000
Site Visitors	Laurie Somers and Nicole Bartfai

Project Abstract

Science and Math To Go! is an elementary curriculum, materials, and professional development system. The model has five components: exemplary curriculum, materials support, professional development, assessment, and community support. SMTG! uses research-based Science and Technology for Children (STC) kits that correlate with state and national science standards and provide approximately 9 weeks of hands-on learning on a given broad topic. The kits are distrubuted through the Materials Resource Center, a centralized kit supply and refurbishment center. Each kit is sent to a teacher with materials measured and prepared for 30 students and all teacher materials needed for the 16 to 18 lesson plans, each designed for 45- to 55-minute lessons. After the teacher returns the nonconsumable items, the kit is replenished with all necessary materials. Prior to receiving a kit, each teacher participates in a day-long training in inquiry-based learning and a day exploring, observing, and practicing with each kit the teacher would like to use. Professional development also covers student assessment and integrating science and math with other subjects.

The overwhelmingly positive response from teachers and students regarding their new science and math opportunities—and sponsors' interest in continuing the program—suggest that SMTG! is indeed a success. Staff believe it has been successful because it acknowledges that the change process is complex and lengthy and provides extended professional development and a support system. Where other programs provide a short inservice and require teachers to gather their own materials and consider themselves implemented, SMTG! provides a full complement of teacher support. This allows teachers to do what they know best: teach.

BEST COPY AVAILABLE

Science and Math To Go!
Anderson, Oconee, Pickens Hub

A. Background

Community Characteristics

The Anderson Oconee Pickens (AOP) Hub of the South Carolina Statewide Systemic Initiative (SCSSI) serves these three counties in upcountry South Carolina. The region is very much one in transition; with the opening of a large BMW plant and other high-tech businesses moving into Greenville County and along I-85 connecting Atlanta and Charlotte, the economy is booming. However, the more remote regions outside of these areas remain untouched by the economic upswing. The counties vary widely in demographics and economic status, from the bedroom communities of booming Greenville to pockets of isolated, rural Appalachian poor. Oconee and Pickens Counties are each whole school districts, and Anderson County encompasses five districts. The seven districts range from 2,500 students to 15,000 students and include some city areas suffering from typical urban education issues and some rural areas isolated from education resources. The population is mostly white, with some Hispanic migrant workers in two of the districts and a small African American population in all seven districts. Economic status of the region ranges from upper middle class suburban families and northern retirees to middle class factory workers to the rural poor.

Aside from measurable population and demographic differences, the region is split somewhat between communities that can garner strong support for education reform and those that are reluctant to give any more funds to a district that is seen by some as squandering public money on administration. One respondent commented that attitudes and perspectives of the citizenry regarding education spending and concerns for quality change at the snowline, separating the mountain population from those in the lower new economy, where reform is seen more favorably. Even so, the wealthiest, most homogenous district has opted out of most SMTG! work, preferring to manage their own science curriculum reform and to do things their own way. Each of the districts has different ideals, different operations, and different expectations. That six of the seven districts came to some consensus around a curriculum and per-student cost is seen as a triumph in itself.

Characteristics of the Grant Recipient Organization

The Anderson Oconee Pickens Hub is one of 13 regional hubs across the state of South Carolina. The hubs were established in the planning for and receipt of a 1993 grant from the National Science Foundation to begin a statewide systemic initiative (SSI) for education reform. The hubs were designed to serve as math and science resource centers for the districts they encompass. They are charged with expanding their regions' use of and access to inquiry-based and exemplary curriculum materials.

Science and Math To Go! (SMTG!) represents about three-quarters of the AOP Hub's work. Hub staff are responsible for the distribution, collection, and refurbishment of the kits, including shopping for and purchasing cost-effective consumable items for the kits. Staff specialists in science and math and a teacher-in-residence coordinate and conduct professional development activities, train trainers, and oversee all trainings. They track which kits each teacher is trained to use and, as time permits, visit schools and classrooms. The Hub, with Clemson University as fiscal agent, manages all the project's finances, including billing each district annually for the number of kits ordered. The executive director oversees all activities and, most recently, has spent considerable time seeking and working with corporate partners and sponsors.

The Hub also provides some assistance at the high school level, helping to align courses with the new state standards, implement block scheduling, and use calculator-based laboratory equipment to integrate science and math. They are undertaking some early investigation of kits for the high school level.

B. Project Overview

Problems/Disparities the Project was Designed to Address

Prior to the formation of the AOP Hub, one advisory board member from Clemson University wrote a white paper describing SMTG! concept of a regional center to support teachers, and in particular providing them materials support. While the concept did not make it into the overall SSI proposal, it was grabbed by the Hub. The white paper described two overall problem areas: (1) inadequate student achievement in, and poor attitudes toward, science and mathematics, and (2) inadequate public understanding of (and consequently support for) scientific and mathematical endeavors, including basic

149

and applied research. More specifically, "hands-on, discovery-oriented experiences so critical to student learning are often not available for a variety of reasons:

- Lack of time by teachers to seek and purchase supplies.
- General lack of space and equipment to prepare 'hands-on' laboratory experiences.
- General lack of equipment for student use.
- Lack of availability to store and maintain equipment.
- Lack of funds to purchase supplies and equipment."

Additionally, project staff noted that many elementary teachers have little preparation in science content knowledge and pedagogy. These teachers are frequently uncomfortable with any science beyond a textbook or simply do not know what to do.

Moreover, the schools and districts, and thereby the Hub, also faced an inequitable distribution of quality teaching materials. Hub staff defined equity both in terms of providing all students opportunity to learn quality science content and reaching underrepresented students. They point to research, stating,

> the benefit of hands-on education, especially in the areas of process and content, has been shown to be disproportionately greater for students from lower socioeconomic, inner city, or rural backgrounds as well as for students of lower abilities. Many academically or economically disadvantaged students have difficulty succeeding in text-based classes due to poor reading skills. In hands-on, inquiry-based programs, which by their nature do not heavily depend on reading skills, disadvantaged children are on a more equal footing with their classmates and succeed, often for the first time, in their school experience.[1]

Approach

Science and Math To Go! is an elementary curriculum, materials, and professional development system. The model has five components: exemplary curriculum, materials support, professional development, assessment, and community support. SMTG! uses research-based Science and Technology for Children (STC) kits that correlate with state and national science standards and provide approximately 9 weeks of hands-on learning in a given broad topic. The kits are distrubuted through the Materials Resource Center, a centralized kit supply and refurbishment center. Each kit is sent to a teacher with materials measured and prepared for 30 students and all teacher materials needed for the 16 to 18 45- to 55-minute lesson plans. After the teacher returns the nonconsumable items, the kit is replenished with all necessary materials. Prior to receiving a kit, each teacher participates in a day-long training in inquiry-

[1] *Making the Case for Teaching Science Using a Hands-on, Inquiry-based Approach*, A Report from Bayer Corporation, Ted Spickler and Christine McCreary, September 30, 1999.

based learning and a day exploring, observing, and practicing with each kit the teacher would like to use. Professional development also covers student assessment and integrating science and math with other subjects.

Status at the Time of the Site Visit

SMTG! currently operates in all the elementary schools in six of the seven districts.[2] One math kit and three or four science kits are available for each grade level through sixth grade (two for kindergarten). The project has trained 650 to 700 teachers since it began. However, due to retirement, moving, and changing grade levels, staff estimate they currently have over 400 teachers using kits. Beginning with the 2000-2001 school year, kits and the requisite training will be available for middle school science as well.

C. Activities Undertaken as Part of the ARC Project

Science and Math To Go! is based on a theory of teaching and learning that has seen a recent upsurge in the education community. Inquiry strategies, while having been used by some teachers for years, really came to the fore in South Carolina with the SSI when it charged the hubs to establish science and math programs reflecting national standards. National standards put out by the National Council of Teachers of Mathematics, the National Academy of Sciences, and the National Research Council necessitate an inquiry-centered approach. In an inquiry system, students learn through hands-on investigations of scientific phenomena. Inquiry challenges students to make sense of what they observe, to expand their understanding of underlying concepts, and to acquire the skills to do so. Inquiry asks students to construct their own knowledge, which allows for a much deeper understanding of the concepts than does reading about the knowledge and concepts. Materials that are developmentally appropriate and research-based are critical. A variety of learning styles underlie inquiry, not just reading and memorizing text, and inquiry involves phenomena that exist in students' everyday lives, making the science and math more accessible to all students.

For many teachers, inquiry-based teaching and learning is a new concept, one that was not taught in preservice training. Moreover, it requires a deeper understanding of the content areas, and science is

[2] The seventh is using other science kits, but at least some teachers report that they are interested in picking up the SMTG! system.

not typically a large focus for elementary teachers. Thus, the program put out by SMTG! represents a dramatic shift for many of the teachers involved. Providing a seamless system of curriculum, professional development, materials support, assessment, and community support was, therefore, critical to starting and sustaining the new program.

Start-Up Activities

Prior to making their way into all elementary schools in the six districts, or even applying for the ARC grant, SMTG! staff lay the groundwork for a project that could grow. The first year after the SSI began, 1994, was a textbook adoption year in South Carolina. Every 6 years, the state issues a list of approved textbook and materials series from which districts can select curricula. Several districts selected the Full Option Science Series (FOSS), a kit-based package. One district opted for the entire package where other districts selected FOSS at a few grade levels. In some cases, district staff felt that many teachers were not ready for the conceptual leap to a hands-on science curriculum. AOP Hub staff were not sure FOSS presented the best kit options and gathered teachers together to display and discuss two additional series, STC and Insights.[3] After a 3-week workshop during the summer of 1995, 12 teachers were equipped with the kits and spent some time tinkering with them and trying out lessons in a year-round classroom. Teachers found the STC kits most user-friendly and easy to learn, which prompted enough interest that districts wanted to pick up the new curriculum. Unfortunately, STC was not on the state adoption list, so the state would not provide financial support for the materials.

During the following school year, AOP Hub and district staff met to develop an acceptable plan to help the districts work as a consortium to pilot the STC kits.[4] The districts were not in a position to manage the distribution and refurbishment of the kits, nor were they able to provide the extensive professional development protocol necessary. At the suggestion of a retiree involved in local politics and the area's Congressman, the AOP Hub went to the Appalachian Regional Commission for support.

---

[3] FOSS was developed by the Lawrence Hall of Science, STC by the National Science Resources Center operated by the Smithsonian Institution and the National Academy of Sciences, and Insights by the Technical Education Research Center.

[4] SMTG! uses FOSS kits for kindergarten and is reviewing FOSS kits that may fill gaps in the new curriculum standards where there are not STC kits available.

The AOP Hub conducted several other activities to build a cadre of teachers who could help support the project. Under the auspices of the SSI, the Hub held several Curriculum Leadership Institutes (CLI) that followed a similar structure as the initial 3-week workshop. Over 50 teachers completed an extensive application package, including a modified teaching portfolio, and were carefully screened through interviews and classroom observations. That the teachers were willing to participate in such an involved selection process is significant to AOP staff; it highlights the commitment and buy-in of the first group of teachers to take on the conceptual change and of district administrators who encouraged their application. Teachers gave up 3 weeks of their summer vacations to be prepared to implement the inquiry-based strategy. Many of these teachers went on to be a part of the first cadre of teacher-trainers for the SMTG! program.

Through the SSI, the Hub also conducted several Administrative Leadership Institutes attended by 27 of 86 elementary principals. At these sessions, groups discussed best practices in science and math teaching, including the development of an inquiry-centered program. These also generated interest and buy-in for SMTG!

Alignment with State Standards

South Carolina has undergone a tumultuous period of drafting and revising standards in science. The most recent version was released in January 2000 after almost 3 years of revisions, two governors, and two state superintendents. Throughout the first few years of the project, SMTG! staff and teachers were reaching to moving targets in determining what to teach and what could be done with a kit. In order to justify the use of the kits, they had to be benchmarked against the standards. Committees of teachers and others have gone through several versions of the standards, including the current version, to identify the alignment of topics covered by the kits to those in the standards. This exercise gives credence to the kits themselves and also helps Hub staff and teachers identify gaps in the kits, both so teachers can fill those gaps with other materials and so staff can look for additional kit resources.

AOP Hub staff view the current (and final) standards as better than previous versions, but still difficult to implement in some cases. Unlike standards in other states, South Carolina's list grade-by-grade topics that should be covered. This creates a shift in at least one topic per grade level, requiring SMTG! to shift some kits up a grade level. The implications are that teachers lose a kit they had previously been trained to use and must be trained in a new kit, one which their students may have used in

the previous year. As with other standards documents, South Carolina's identifies more topics for a given year than a teacher can adequately cover using inquiry and discovery strategies.

Along with the new standards, South Carolina will be field testing a new state science assessment, the Palmetto Academic Challenge Test (PACT), in spring 2001. Many teachers are unsure of how the kits and the skills and thinking processes developed in an inquiry-based curriculum will translate to standardized testing.

While South Carolina's mathematics standards have not undergone the political challenges faced in science, the math kits have presented different issues. Math has traditionally placed more emphasis on the sequencing of lessons than the science; that is, skills build on one another. This makes rotating kits difficult since many teachers would want to teach the same units at the same time. And this counteracts the cost-effectiveness of rotating kits. Moreover, math manipulatives are more likely to be used in multiple units than are science materials. Many teachers want access to the same materials all year long, and since few math materials are consumables, each teacher would need a similar set of manipulatives. Consequently, there were no math kits commercially available to SMTG! With the SSI's emphasis on science and math, Hub staff and elementary teachers who teach both subjects wanted to capitalize on the successes and inquiry-based learning using kits. So SMTG! worked with math specialists and teachers to develop one kit for each grade level. After researching and experimenting with different materials, the Hub put the materials list out for bids and found a supplier to provide the required items. This contract is now over, and staff are in the process of negotiating a new one.

Professional Development

The component to the SMTG! project that staff value most and from which they will not waver is the professional development protocol required for teaching in an inquiry-based system and using the kits. Providing professional development in what is seen as a conceptual shift in teachers' practice is difficult and time consuming. Ongoing training over a long period of time is necessary to help teachers make the leap from a mechanical use of the kits to true inquiry. Trainers report they can see the shift in teachers' lockstep implementation to their real understanding of how this is a different kind of teaching and learning.

SMTG! specialists in science and math and the teacher-in-residence have made changes to the professional development protocol over the years, largely based on teachers' feedback. Most generally, they follow a 3-day model where the first day covers inquiry, discussion of the concepts and strategies to

be employed and the constructivist learning cycle, modeling of implementation of the kits, and reflection. The second and third days are based around an actual kit. A fourth day is optional for teachers who want to be trained on another kit. In order for a teacher to be able to request a kit, he or she must be trained specifically on that kit. Once they have had the first day of training on inquiry concepts, they need only complete a day on each additional kit they would like to use. One trainer indicated that many teachers do not appreciate the day spent on inquiry until they have been using the kits for a year; that is, they do not truly understand inquiry until they have done it for a while. At that point, they know why the kits work. She went on to say that trainers can tell where teachers are in their development in inquiry by what they say about that day and its utility.

Until recently, teachers had to complete the overview training for science and then again for math. The major modification to the training over time was to combine discussions of inquiry to include both subjects. Because elementary teachers, except in departmentalized sixth grades, teach both subjects, participating in both sessions became repetitive. Also, trainers have provided more structure to teachers' exploration of the teacher's guide provided in the kits; now, groups of teachers research and become "experts" in topics included in the guide and on the science or math content included.

Most of the trainings cover multiple grade levels, and full group activities include something from a kit for each grade level. The size of groups trained in a single session have ranged from 10 to 55 teachers, although 20 to 30 is optimal when handling the materials. Trainings are held at schools, libraries, Clemson conference facilities, or at the Materials Resource Center itself. Hub staff and Clemson facilities staff are currently negotiating with the building's owner to renovate another section of the building into a training facility. This would not only make scheduling trainings simpler, but it would also minimize the materials that would need to be transported to off-site training locations.

Most of the training is conducted during the summer, and teachers give up their own vacation days. Scheduling training during the school year is difficult, as teacher release time and substitutes are limited, particularly with many other programs and inservices conducted. Several school principals have asked SMTG! to conduct a training for all teachers in their schools. This has worked well because it provides a large day-to-day support group for teachers implementing the kits.

Materials Support

The key component to the SMTG! system that makes using an inquiry-based approach possible is the cost-effective materials support provided. As an example, a typical new science kit costs $433[5] and, on average, a consumable refurbishment set costs $97.50 from the supplier. To purchase three kits each for 1,000 teachers costs $1,299,000 the first year and $292,500 each year thereafter, totaling $2,761,500 over 6 years. To rotate 1,000 kits among teachers and purchase only one new kit for each teacher costs $433,000 plus $195,000 for refurbishment sets the first year and $292,500 each year thereafter, totaling $2,090,500 over 6 years. But to purchase 1,000 kits, rotate three times and refurbish from a materials resource center, where refurbishment of consumables and nonconsumables costs only $65, totals $1,538,000. By rotating each kit through three classrooms per year and refurbishing from their own stocks, using the SMTG! could save districts serving 1,000 teachers some $1,223,500 over 6 years. Savings like these makes the program possible for districts to implement.

The Materials Resource Center began on the back porch of the old house maintained by Clemson University that serves as the Hub's offices. It is now housed in a warehouse facility rented by Clemson as in-kind support to SMTG! and is filled with storage shelving and work tables and outfitted with a loading dock. The efficiency with which staff and volunteers can refurbish the kits with pre-cut, pre-measured materials is critical to SMTG!'s operations. Teachers comment that the greatest difference between these kits and others on the market, and even the new kits direct from the supplier, is that each item used in every lesson is ready to go. Teachers no longer have to measure and strip electrical wiring, cut wax paper to the required dimensions, count the required number of pipe cleaners, or even hunt down a fine point permanent marker and jumbo paperclips. The time required to do this pre-lab work cut into teachers' planning time and time to learn the science content behind the activities. Nor do teachers have to purchase lab materials themselves, as is otherwise the case for items not on the state adoption lists.

When a new kit arrives from the supplier, Carolina Biological Supply, it is emptied and supplies are reduced to the minimum needed for a 30-student classroom. After providing materials to teachers for several years, the materials support specialist pared down the needed items to just the amount needed for each activity. For example, when an experience called for each pair of students to have an ounce of vinegar, the kit did not need the gallon originally supplied. Similarly, when each student needed a sheet of black paper, a whole ream was not required. Project staff researched and tested numerous

[5] Each math kit costs over $500 because there is no commercial vendor and therefore no economies of scale.

arrangements, containers, and quantities of each item and were able to reduce a classroom's worth of materials from two crates to one, reducing delivery costs as well. Materials for each lesson are counted and placed in individual reclosable bags. After the materials are prepared, the kit is packed according to a diagram of how items best fit into the colored crate designated for that grade level. Packing lists of consumable and nonconsumable items with prices of each and instructions for repacking kits are included along with suggestions forms and sheets for teachers to provide interesting stories of how students used kits.

After delivering the first rounds of kits themselves, SMTG! staff researched delivery options and eventually negotiated a special contract with UPS to ship the crates to individual schools and teachers and pick them up 10 weeks later. Two weeks before UPS is scheduled to pick up the kits, teachers receive a postcard from the Materials Resource Center reminding them to wash and dry all containers, activity trays, reusable bags, and all other nonconsumable items. If materials are damaged, teachers are instructed to throw them away, rather than returning them to the center. All leftover consumable items may be kept by the teacher as long as they are transferred to different storage containers. Kits are packed according to instructions, with heavy items on the bottom and breakable items secured. UPS brings the kits back to the center, and the process begins again. Loss of materials has not been a problem; occasionally a teacher forgets to pack an item, but it is easily retrieved.

Corporate and Community Support

Community support has been critical to the launching of the SMTG! program. There has been remarkably little resistance to the implementation of a largely progressive, constructivist curriculum. This is due in part to the fact that teachers have not given up textbooks completely. Most teachers are using two or three kits throughout the school year, leaving time to cover topics not covered by any kit through state-approved texts and other materials. Moreover, teachers have been encouraged to display and discuss the kits at parents' nights. The local press has also been helpful in explaining the program and getting the word out to legislators.

Volunteers contribute heavily to the refurbishment of kits. University student organizations, mostly from Clemson's College of Engineering and the Sciences, and retirees come on a regular basis to assist with unpacking used kits, preparing new materials to go in kits, and repacking kits for distribution. Some retirees also help with locating additional corporate and community partners. A small number of

retirees, Clemson faculty, and parents volunteer in classrooms helping teachers monitor students' discovery activities.

SMTG! has nurtured a number of linkages with local and South Carolina-based corporations. For most, the initial component of the partnership is financial. Duke Power, Michelin, DuPont, and BMW have all supported SMTG! financially. More intangible, and perhaps more important, is the sense of significance of the projects these partnerships garner. The linkages have been an invaluable asset to SMTG! when going to school boards; to say that these large companies, some not even located in the AOP region, are supporting the project, is helpful. The companies have looked at the materials, the program, and students using the kits, and have said that this is the type of science and math they want, and they promote the skills that employees need. The challenge in working with the partners is convincing them that they are not there to create new lessons and kits or to manufacture existing kits less expensively.

Through the Hub's linkages with the SSI and BMW, familiarity with the program has been spread statewide and to the legislature and state department of education. Widespread knowledge of the program is helpful in garnering further support. More broadly, SMTG! and the Hub also work closely with the Association of Science Materials Centers (ASMC), a group of 130 member centers across the country and in Canada, Mexico, and Sweden. The centers, while facing their own challenges, share their experiences and solutions to problems and provide support to each other in changing an educational system. The Hub's executive director is the recent past president of ASMC.

D. Problems Encountered

Standards as a Moving Target

That South Carolina's science frameworks and standards have changed frequently has made it difficult for SMTG! to stabilize the system. Having to realign the kits has taken time and resources away from training new teachers and training on additional kits. And with some kits moving grade levels, teachers will have to train on new kits and will be unable to use some kits they already trained to use. Staff have prioritized retraining by the kits they feel are most important for students, while taking into consideration that students may end up using a kit they had seen in the previous grade (although this will only be a problem for the first year after realignment).

While they feel they made the best kit choices, AOP Hub staff still recognize that selecting a curriculum package that was not on the state's textbook adoption list meant they selected something that had no funding tied to it. However, they acknowledge that there will never be kits or other programs that cover all of the standards, but with kits as the base and textbooks as extra resources, there can be a complete system.

Capacity to Provide Professional Development

SMTG! has far more demand for professional development than it can meet. Teachers want to be trained on new kits, and new teachers want the initial training. In addition, addressing the new standards and assessments has strained limited the program's training resources. Also, because teachers are trained on each kit individual, it is hard to coordinate consecutive days of training for teachers who are already trained on different combinations of kits.

Teacher Professional Development Time

Teachers have trouble finding time to participate in professional development activities, and SMTG! has trouble coordinating the limited schedules of release time to get teachers and trainers out of their classrooms. This has problem has been intensified by the accountability system and high-stakes testing beginning in 2000 in math and 2001 in science. Finding time to conduct followup and reflection activities is even more difficult. Moreover, new school-level report cards will combine teachers' sick days and professional development days, making teachers leery of taking more professional development time. The state requires only 6 course "hours" of professional development every 5 years. Participating in the almost 20 hours of professional development for a teacher beginning to use kits with no recertification credit is far above what some teachers are willing to do. Still, staff estimate that overall, more than half of the teachers using SMTG! materials participated during their summer vacation time.

Teacher Turnover

Several of the poorer districts are having trouble retaining teachers, both those using the kits and trainers. As teachers leave, their schools are left with grade levels that have no teachers trained to use the kits. One teacher suggested that perhaps the kits themselves would eventually help retain teachers because they would not want to move somewhere that they did not have access to SMTG! materials.

159

Demand for Math Kits

Unlike science, there were no commercially available math kits for SMTG! to support. AOP staff and teachers had to create them and contract with a supplier for the materials. This was a long, slow process and drew time away from other activities, including providing professional development. One kit was created for each grade level, but demand for additional math kits continues. While everyone hopes that new kits will be developed in the coming year, researching and testing materials and then having kits assembled is a lengthy process.

Student Assessment

Teachers still face somewhat of a mismatch between the content and skills in the kits and the high-stakes tests, but staff expect that the new PACT exams in science will be better correlated than current tests. The problem is twofold. Ultimately, as far as the school systems and the state are concerned, the curricula employed should result in higher student achievement measured by the state assessments; if the content and skills in the kits do not match those of the tests, this link may not be made. On a smaller scale, student performance on individual lessons and units should be measured against the standards. Without adequate assessments correlated to the standards and the kits, teachers may be unable to adequately assess student performance. Teachers seem to be of mixed opinions as to how much of a problem this is. Some teachers, possibly those who have been teaching longer, already have assessments they can use for their students or they have an easier time using alternative methods. Other teachers, possibly less experienced, would like more assessment materials provided with each lesson and kit.

Materials Capacity

Teacher demand for kits overwhelms the capacity of the Materials Resource Center to distribute them, due both to the supply of kits and their refurbishment. While the center's space has improved dramatically over the early years, it still needs a more efficient shelving system and space for cutting and measuring materials and repacking the crates. This will become even more of an issue as SMTG! begins distributing kits for middle school and adding more math and FOSS kits to meet additional standards. FOSS kits require teachers to do much more preparation work than even the new STC kits, including providing many consumable items themselves. Having set a high standard with the STC kits, SMTG! will be expected to do the same with FOSS kits.

Tracking Kits

SMTG! looked into and, in fact, purchased software and bar-coding equipment to make for more systematic tracking of individual kits, but the software turned out to be incompatible with the computer systems they have. Instead, kits are tracked on paper. While this is working, it is less efficient, and in the long run, as more and more kits are distributed, it will become more difficult to monitor where each kit is and to determine if a kit will be available for the period a teacher requests it. With the bar-coding, the materials support specialist will also be able to use UPS's online tracking systems more effectively.

Community Support

SMTG! has met with surprisingly little resistance to change that is typically felt with new education programs. However, some teachers have resisted the program. Many will not volunteer to come to a professional development session, and if they are "volunteered" by the principal, they come unwillingly. Many teachers, they have found, simply do not have the background, and just do not want to teach science. Others are not comfortable with such a different style of teaching and using the materials in general.

Some resistance has come from the districts about having to pay so much for science. While the price of the kits has come down dramatically, the current $16 per student is still far above the amount per student most districts had been putting into budgets for elementary science. Staff have worked with superintendents and others to explain the benefits of the program and lessen the "sticker shock" they express. Some of the local districts also express concern about the time Hub staff spend working with other hubs and districts, charging that AOP is there to serve local schools. However, the executive director explains that in the long run, these are important seeds of investment. Statewide recognition is critical to getting state approval of the curriculum and to gaining visibility with potential corporate sponsors.

Alignment with Other Reform Programs

Several of the districts have undertaken models of school reform that are hard to mesh with the SMTG! science model. One, the Cunningham model, focuses on literature and writing through longer blocks of time. Each subject is given a certain amount of time during the day and week, and some

perceive that science gets shortchanged. In the model, science is integrated with other reading activities, limiting the time for hands-on investigation using the kits. Schools that have implemented the model are still using the kits, but it is unclear to what extent science teaching has really changed.

E. Evaluation and Dissemination

Evaluation

The Hub began the ARC grant period with several evaluators on board to design an evaluation plan. Unfortunately, at the beginning of the grant, two left the region, and there was a personality conflict with the third. Consequently, no formal evaluation was conducted.

Informally, several activities have been completed. The initial group of teachers to be trained created portfolios of their teaching with the kits. These were used mostly for triangulation with other evidence to determine if what staff were hearing was happening was actually the case. They were also used for sharing with other audiences. While they are not asking teachers to complete portfolios anymore, they are still asking teachers to reflect on their uses of the kits.

Staff meet regularly with a group of teachers, most of whom are also trainers, who are constantly receiving feedback from other teachers. It was meetings of these groups that led to the restructuring of the professional development protocol. Teachers also provide some feedback when returning kits. Along with the packing lists, each kit contains some forms for teacher suggestions and problems. Staff have not done anything systematic with responses, but they do review each one.

Hub staff recognize the need to gather more data and conduct some studies on the outcomes of the SMTG! project. Several schools plan to do some comparisons between scores on the state math exam of students who were exposed to math kits and students who only had regular instruction. Based on teacher and student comments on the tests (scores are not yet available), the kits were very beneficial, particularly in the areas of reasoning and problem solving. They hope these studies will yield some data that can be shared with a broad audience, including legislators. In addition, Hub staff are planning to look at teacher learning patterns to help understand why some teachers "just don't get it" or do not use the kits. They are expecting to find two explanations: either that the teachers' preferred mode of learning is

too sequential, precise, and structured for some activities in the kits, or that teachers do not conceptually understand that students need to investigate.

Dissemination

The AOP Hub is a partner in a grant from the National Science Resource Center (NSRC) specifically for information dissemination about SMTG! and materials resource centers in general. Under the grant, Leadership and Assistance for Science Education Reform (LASER), they set up partnerships with other school systems and corporations to conduct leadership institutes to help districts with strategic planning for implementing new science programs. AOP, Clemson, the SSI, DuPont, Michelin, BMW, and Greenville County School District supported a 5-day Strategic Planning Institute in January 2000. LASER events around the country, and South Carolina as a demonstration site in particular, have legitimized many of the things the Hub was already doing and provided them additional resources as well.

SMTG! staff have participated in numerous events of the Association of Science Materials Resource Centers and the National Science Teachers Association and have shared resources with participants through conferences and the ASMC listserv. The Hub has also had visitors from Tennessee, Mississippi, Georgia, and Alabama; their visits typically consist of tours of the materials center, classroom observations, talks with participating teachers, and a description of how the program works. They are not yet to the point of a ritualized visitor program and hope to avoid having one.

AOP's website has a wealth of information about the program, descriptions of each kit, research and resources on kit-based learning, and a PowerPoint slide show of the experiences of a first grade class using the Solids and Liquids kit.

F. Sustainability and Project Expansion

The biggest question facing SMTG!'s ultimate sustainability is whether the STC kits will appear on the state textbook adoption list. If they do, state funding can be used for the purchase of new kits (and potentially their refurbishment). If not, districts will continue to feel the budget squeeze to maintain and expand their use. Staff report that districts are beginning to take ownership of the curriculum, particularly as it becomes teachers' expectations that the kits are the districts' established curriculum. To roll back now, when teachers are so pleased, would be politically difficult for districts.

Sustainability Strategies

AOP will be completing its third ARC grant in fall 2000. Staff will continue to write grants, but they hope to begin to use grant money solely for professional development, not to purchase new kits and materials. Staff believe their ARC grants have been critical to leveraging other funding both at the beginning of the project and now. In fact, the ARC investment of just over $250,000 has grown to a $1 million project. Initially, the districts would only fund the program if theirs were the matching funds; thus, the ARC grant was necessary to get them involved. Throughout the period, the ARC funds have allowed for enough participants in enough schools that Hub staff could demonstrate the value, and teachers' relinquishment of vacation days, to other supporters. Staff knew they needed to reach a minimum level of implementation before they could get the attention of the corporate sponsors.

District funding. AOP is currently working with each district to encourage them to make SMTG! a budget line item. Currently, several of them have been "finding" extra money to fund the program. But in order to continue to fund it, they need to plan to have available funds. This will also show to teachers the districts' buy-in and support of the program.

State funding. The most critical step in the long-term funding of SMTG! is getting the STC kits on the 2000 state textbook adoption list. This would allow for the purchase and refurbishment of kits by districts under state textbook funding. Districts would still pay for professional development and associated materials, but Hub staff see that as a good way to force the issue of retraining teachers. Their research on other kit implementation has shown that if no professional development is provided, kits are simply not used. Moreover, retraining is a district responsibility even when traditional textbooks are used.

The executive directors of the AOP Hub and the Pee Dee Hub, which is implementing its own SMTG! program, have met with finance officers in the state education department to open a new source of funds for refurbishing kits. After talks for some time, the department has authorized $750,000 for the refurbishment of kits for districts that partner with a hub. Where usually the district pays for refurbishment, now the Hub can refurbish kits and be reimbursed by the state. The executive director attributes this to the fact that so many hubs are doing materials support for districts.

Approximately 10 percent of the AOP Hub's funding through March of 2001 comes from National Science Foundation support for the SSI. They anticipate this funding will continue through 2003 and that SMTG! will become a formal part of the SSI strategic plan. Eight of the 13 hubs are doing some type of materials support now.

Corporate support. Hub staff expect that their corporate partners will continue to provide support to the project. However, the businesses feel, and the executive director agrees, that ongoing support of education programs is a state responsibility. They see themselves, rather, as catalysts for change, and so will not ultimately fund a whole program once it is in place.

Selling the services. SMTG! staff are also considering a system where they could sell their professional development and materials support to districts outside of the area. They would price the services just at the break-even point to keep their not-for-profit status. Also, if negotiations with the vendor of the math kits are successful, the math kits could be sold commercially with SMTG! receiving royalties for each unit sold.

Project Expansions/Spin-Offs

Expansion of the available kits. While retraining teachers to use kits aligned with the new standards is the priority, staff are also expanding the number of kits available to teachers. Beginning in fall 2000, teachers of seventh and eighth grade science will have access to training and kits. These teachers, having seen what the sixth grade teachers are doing, have been clamoring for these kits for years. Also, SMTG! will be developing an additional math kit for each grade level in the coming year.

Expansion to other hubs. Staff at the AOP Hub have been working extensively with staff in the Pee Dee Hub in the northeast corner of the state. With 21 districts in 19 counties, the Pee Dee Hub is the largest, the most poverty-impacted, and the most rural, but it operates with the same staff and budget as other hubs. Through the SSI, Pee Dee staff learned of SMTG! and in 1998 brought five teachers to a SMTG! training. The group of first through third grade pilot teachers, who had participated in Pee Dee Curriculum Leadership Institutes, used the kits in their classrooms and were convinced this was a system the Hub should adopt. The following year the group expanded to include fourth through sixth grade teachers, and AOP staff came to Pee Dee to conduct another training, assisted by the new cadre of Pee Dee trainers. The group continued to expand to a total of 250 teachers, and now all 21 districts have bought in to the system and 19 are actively participating. The AOP executive director also assisted them

165

in garnering corporate sponsors. The Pee Dee science specialist indicated that they would not be where they are today without the AOP Hub's assistance and experience.

Pee Dee professional development is structured around 2 full days of training plus 1 day of followup later. By having a followup day, teachers had time to practice using the materials and have the opportunity to bring back student work and share their experiences with other teachers.

Future Plans

In addition to adding more kits in math and adding middle school science kits, Hub staff plan to continue to spread SMTG! materials throughout the schools and to teachers who have not yet volunteered to participate. Also, because the program is no longer in the first wave of teachers, those most committed, they will be adjusting the professional development system to reflect differing needs of beginning teachers, reluctant teachers, and those with less of an understanding of an inquiry approach.

Hub staff and teacher leaders are continuing to provide support prior to the new state testing being piloted in spring 2001. They are anticipating the types of items on the test will be like those on NAEP and TIMSS and are drafting similar items to help teachers prepare their students and align kit activities and assessments to these. Since NAEP and TIMSS include many open-ended items, they expect there will be a good match.

G. Accomplishments and Outcomes

Staff and teachers report that inquiry is closing the gap between high and low achievers. Students are more engaged in the activities and enthusiastic about science. Teachers associate high interest with more learning. When a group of 20 first graders were asked how many wanted to be scientists, almost all raised their hands. SMTG! has brought a subject that was typically put on the back burner in elementary schools to the fore. Moreover, science is now being taught in a systematic, connected way, rather than through fragmented lessons based on teachers' previous science background or available materials. Student understanding improves through this more coordinated learning.

While there are no hard data on changes in student achievement, anecdotal evidence suggests to teachers and staff that traditionally low-achievers are doing better in science than before because the

hands-on activities address the multiple learning styles of students. Where some students did poorly before because science was based largely on reading text and writing answers, they now can work with their hands and observe scientific phenomena. One teacher commented, "the kits ask students to think harder than they do for other subjects, and they like it! They leave the children wanting to learn more." Another said, "lower achieving students shine when given the opportunity to talk and use manipulatives." And if the recent administration of the math PACT testing is any indication, having had so much experience with reasoning and problem solving is sure to help students.

According to teachers, the kits provide better science opportunities for lower grades than were otherwise available. In a first grade class, there have seen an increase in discussion and sharing between students. Students also have the opportunity to write about science almost every day. In math, students are doing more cooperative work and much more problem solving than when they used to do rows of arithmetic. Problem solving is an area many teachers said they avoided in the past.

Several teachers reported that classroom management is easier, even with the vast amount of materials and student-driven tasks involved. While more monitoring of individual students must be done with all the materials around the classroom, students are more engaged and attentive to the tasks. This has resulted in fewer discipline problems in many classrooms. One sixth grade teacher in a departmentalized school reported that students with behavior problems in all of their other classes are well-behaved, active participants in her science class. Several teachers reported that students have asked to stay in through recess to complete their experiments or have asked to take items home to share their findings with their families. Another teacher said that her students were borrowing nonfiction science-related books from the library for required free reading, where third graders generally select more simple storybooks.

Teachers had a difficult time explaining how their pedagogy and teaching strategies have changed. One teacher described the change: "you don't tell the kids what to look for and don't give all of the definitions up front. The lesson begins actually after [the kit is opened]. The students do [the experiment] and then figure out why they're doing it. It keeps them interested."

Teacher attitudes toward science have also improved. Teachers' jobs are made easier by not having to prepare so much for science activities, and they are learning more science themselves. They no longer have to purchase math and science materials out of pocket. While the specter of the high-stakes assessment looms and some teachers are uncertain as to the connection between the kits and the tests, they

are confident that if they know more science and are more comfortable teaching science, their students' performance should reflect that.

Project staff report that they have raised the bar for equity, but have not yet created equitable opportunity to learn. The standard for good science teaching is higher than ever before, and they have brought many teachers closer to the bar, but there are still too many schools where the quality of science teaching students have depends on the teacher they get. Staff know this is still not good enough for equitable learning opportunities.

H. Lessons Learned by the Project and Recommendations for Other Communities

Learn from people who been through this already. AOP staff worked with a number of other regions that were implementing a similar system before advancing too far on their own. They have since helped other areas follow in their footsteps. They point out that there is a lot of expertise and many models for these systems, and while every context is different, often the issues, if not the solutions, are similar. The National Science Resources Center and the Association of Science Materials Center have been invaluable to SMTG!

Ensure that the impetus for change comes from within the district. While the Hub did much of the legwork in representing and pushing the inquiry-based approach through the use of the kits, teachers and district staff had indicated that they wanted the change and provided that support throughout implementation. But it was after the presentation and display of various kit options and a meeting where the seven districts decided to work together that the project really got started. Also, because it is not a mandated change in most schools, teachers who do participate take ownership of the program. Without the ongoing support and buy-in of teachers who volunteer for professional development and actually use the kits regularly, SMTG! would not have been as successful.

Retain a common set of core principles, but be adaptable. SMTG! has a core set of beliefs and practices, centering mostly on the content and length of professional development, that they have held to steadfastly. However, when teachers complained about the redundancy of the inquiry sessions for science and math, they were willing to adjust procedures in a way that did not compromise the core beliefs and practices. They are cautious not to sway from what they know teachers need regardless of what the teachers say.

Treat materials support as a business. Traditionally, say Hub staff, educators have been willing to share ideas, support, and materials for free. However, they have found that they need to think as if they are providing a service that has a monetary value. This includes literal buy-in, as well as figurative. They have seen that when goods and services offered do not cost anything, they are treated as having no value. Thus, the districts give of their money and teachers of their time. In fact, staff have discouraged districts from providing teachers with incentives, such as stipends, for participating. They feel this brings in teachers for the wrong reasons and breeds inequality among teachers attending. While educators tend to avoid marketing, they acknowledge that they would not be where they are today without having a marketing attitude, if not a plan. They call this being "strategically opportunistic."

Build a small group of people who are fanatical about what they do. Change is hard, and science at the elementary level is harder and not a priority. But with a staff with dogged determination, the Hub made good use of what they view as a 3-year window of attention before the next reform bandwagon rolled in. SMTG! has a cadre of fanatics in each district, mostly teachers, but some principals and district office staff, and in a few of the corporations; they can count on these people to push the reform.

Cultivate insiders. To facilitate change, it is important to know the landscape and the players in the system. By cultivating support among key members of the participating school districts, the AOP staff has been able to continue pushing the system toward change. Helpful too is that key AOP staff are former teachers and district officers from the area.

Train at least two teachers from each school initially. The first group of teachers trained were teachers who had volunteered to participate. Hub staff found that while they were committed, these teachers were working too much in isolation and lacked day-to-day support from other teachers just beginning with the kits. It would be useful, then, for a project just starting out to suggest teachers come with a colleague when first participating.

I. Summary and Conclusions

The overwhelmingly positive response from teachers and students regarding their new science and math opportunities—and sponsors' interest in continuing the program—suggest that SMTG! is

indeed a success. Staff believe it has been successful because it acknowledges that the change process is complex and lengthy and provides extended professional development and a support system. Where other programs provide a short inservice and require teachers to gather their own materials and consider themselves implemented, SMTG! provides a full complement of teacher support. This allows teachers to do what they know best: teach.

The program could be—and in fact, has been—successful in a variety of regions and contexts. While staff recognize that it is not right for everyone, it is a system that is growing around the country. Models do differ, but they follow similar professional development and teacher support requirements.

170

U.S. Department of Education
Office of Educational Research and Improvement (OERI)
National Library of Education (NLE)
Educational Resources Information Center (ERIC)

NOTICE

Reproduction Basis

	This document is covered by a signed "Reproduction Release (Blanket)" form (on file within the ERIC system), encompassing all or classes of documents from its source organization and, therefore, does not require a "Specific Document" Release form.
X	This document is Federally-funded, or carries its own permission to reproduce, or is otherwise in the public domain and, therefore, may be reproduced by ERIC without a signed Reproduction Release form (either "Specific Document" or "Blanket").